MASSACHUSETTS INSTITUTE OF TECHNOLOGY
Department of Naval Architecture and Marine Engineering
Cambridge, Massachusetts 02139

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
DEPARTMENT OF NAVAL ARCHITECTURE AND MARINE ENGINEERING

Report No. 68-18

# STUDY OF THE METHOD, EFFECTIVENESS, AND POTENTIAL OF GOVERNMENT SUBSIDY TO THE U.S. MERCHANT MARINE

BY

E. G. FRANKEL

SEPTEMBER, 1968



Prepared Under M.I.T. DSR-70562

Sponsored by:
OFFICE OF NAVAL RESEARCH
DEPARTMENT OF THE NAVY
Contract No. N-00014-67-A-0204-0011
NR 276-022

## Table of Contents

## List of Figures and Tables

# 1. INTRODUCTION

Since early in the history of the world's private and commercial shipping, the economic, political and military importance of the merchant marine was recognized and supported by direct or indirect government involvement. The Italian city states such as Venice, as well as Spanish, Portuguese, English and French monarchies, sponsored commercial shipping by indirect subsidies in the 15th to 18th century. The German Hansa States, as well as the Dutch and various Baltic countries, enacted direct subsidy support laws in the 16th to 18th century. In many of these states, influence on an effective commercial shipping capability on the political viability, the public affluence, and the military sufficiency of the nation was recognized in addition by the assumption of the risks involved in commercial shipping by the public and/or the state.

Various imperial or colonial nations used the merchant marine as an indirect arm of the military for conquest and resupply and many merchant ships were armed in time of conflict to assure defensive capability and potential coverage for landings on hostile shores.

In the 15th to 20th century practically every world seafaring nation has used its merchant marine as an adjunct to naval forces. Throughout history, privately owned ships have been confiscated or conscripted in support of military actions.

In the history of the United States from Colonial days, the War of Independence, the Civil War, World War I to World War II, to the Korean and the Vietnamese Wars, the U.S. Merchant Marine or private commercial shipping has been called upon to render service in the public or national interest.

In addition, it has been found throughout history that a sufficient merchant marine under effective control of a nation or state adds considerable power and influence to its economic participation and competitive position in trade or commerce. The exchange volume and cost of goods as well as the control of markets and trade, as such, is largely a function of the size and utility of the commercial shipping under the effective control of a nation.

As a result of the above and other considerations, the government of the U.S. has attempted to encourage and support an effective merchant marine throughout its history. The most recent and currently active law applying to all Federal involvement and support of the U.S. Merchant Marine is embodied in the "Merchant Marine Act, 1936", as amended through the 90th Congress. This Act and its amendment are furthermore supported by the "Shipping Act, 1916" and other related Acts. All these acts are based in essence on the declaration of policy of Title I:Section 101, in which is stated:

> "It is necessary for the national defence and development of its foreign and domestic commerce that the United States shall have a merchant marine (a) sufficient to carry its domestic waterborne commerce and a substantial portion of the waterborne export and import foreign commerce of the United

States and to provide shipping service on all routes essential for maintaining the flow of such domestic and waterborne commerce at all times, (b) capable of serving as a naval and military auxiliary in time of war or national emergency, (c) owned and operated under the United States flag by citizens of the United States insofar as may be practicable, and (d) composed of the best equipped, safest, and most suitable types of vessels, constructed in the United States and manned with a trained and efficient citizen personnel. It is hereby declared to be the policy of the United States to foster the development and encourage the maintenance of such a merchant marine."

It is the purpose of this study to review the method, effectiveness and potential of the various direct and indirect subsidy programs in effect, in satisfying the statement of policy quoted above. Historic developments leading to the current state of the U.S. merchant marine will be discussed. Particular attention will be devoted to future needs, with regard to both the size of the merchant marine to fulfill the intent of the acts, and the type of ships to satisfy the new demands introduced by the changing technology.

Recent years have brought a distinctly new trend in transportation. Integrated transportation demands that shipping be more responsive to the requirements of inland or coastal feeders in the U.S. and abroad. As a result of these developments and the changing patterns in world trade, the distribution and requirements of 'essential' trade routes is vastly different today and will continue to change. Unless the U.S. merchant marine is equipped with the means for effective response to the demands of change, the downward trend of its participation in U.S. foreign trade is bound to continue to the detainment of the economic, political and military influence and well-being of this country.

## 2. BENEFITS AND COSTS OF SUBSIDY SYSTEMS

The declaration of policy of the Merchant Marine Law of 1936 was stated in the Introduction. The original structure of the law and the various provisions contained therein were appropriate and effective prior to World War II. Subsequent developments in world trade, U.S. economy, U.S. politics, technology, budget requirements, and others have largely resulted in negating the original intent of assuring the health and sufficiency of the U.S. Merchant Marine.

We assume that the U.S. needs an ocean shipping capability to meet emergency requirements and a portion of its foreign trade. Within these broad objectives, the public interest requires that they be achieved as expeditiously and economically as possible. Furthermore, the premise should be assumed that the powers of the free enterprise system, including its inherent risks and rewards, innovations and propensity for growth, are the best vehicles for the implementation of these broad objectives. As a result, any system designed to aid an industry such as the U.S. Merchant Marine must be structured tc employ the best attributes of the private enterprise system in an equitable manner, and in a way that assures maintenance of incentive, growth, innovation, judgment, and effectiveness.

The cost parity system employed in the current laws attempts much of this. Basically, we may summarize the purposes of an

industrial aid system as:

1) Maximize probability of achieving objective.

2) Maximize national benefit received for public money spent.

3) Increase productivity.

4) Assure retardation of inflationary trends and resulting effects on other industries.

5) Maintain freedom of private enterprise management and business decision and choice.

6) Minimize government regulation, protection and involvement.

7) Assure true collective bargaining.

8) Assure competitive, free rate-setting.

9) Simplify aid administration.

10) Maximize incentives.

Other reasons may be to protect the high living standard of U.S. workers, and to assure some competitiveness of the maritime industry to 'conserve U.S. dollars as an aid to the U.S. balance of payments'. Generally, aid or subsidy to industries is offered to 'infant' industries or to assure national security. The 'infant' industry argument obviously does not apply to one of the oldest industries in the world's largest and most productive economy. While other industries can be 'protected' by tariffs in lieu of subsidies, the merchant marine and shipbuilding industry is supported by direct aid and cargo preference. Relevant legislation actually relies on the arguments of maintenance of higher living standards, balance of payment, and national security.

While higher wage rates are cited most frequently as the reason for noncompetitiveness, the argument ignores the real determinant, which is the labor cost per unit of output. High labor productivity in an industrial country such as the U.S. permits a predominance of manufactured goods to compete favorably in international trade in areas with lower wage rates and lower labor productivity.

Foreign shipping is an export industry, as are U.S. airlines operating on foreign routes. Both buy their labor and capital resources from the same market, yet the shipping industry requires a U.S. subsidy while airline operators force some of their foreign competitors to require subsidies through the efficiency of their operations. Some of the reasons are obvious. While the airlines adapt to the system of high labor productivity by adopting capital intensive operations which take full advantage of the lower U.S. costs of capital, the greater availability of capital, and more advanced technology, U.S. steamship operators and shipbuilders do not use all the capital resources available to them, follow instead of lead in the adoption of new technology, and do not provide incentives conducive to higher productivity.

A recent estimate of the relative proportions of expenses for modern liner ships and jet aircraft indicate that over 24% of the ships' expenses (before subsidy) are for crew wages, compared with 12% for jet aircraft. On the other hand, aircraft operating expenses include 16% for fuel compared to 7% for fuel of the ship. Over 28% of the airline operators' costs are for maintenance, for which the ship operator spends a mere 4%.

The subsidy system basically discourages high risk and imaginative operations, and does not include any kind of incentives. If we consider the distribution of costs incurred by U.S. and foreign operators for a typical modern 20-knot break bulk cargo liner (Table 2.1), we note that the proportion of labor costs after subsidy are appreciably lower than those of the foreign competitor. Similarly, fuel costs are lower, which indicates a desirability to offer higher speed U.S. ships which by itself will increase productivity, as capital costs increase much more slowly than fuel costs.

Table 2.1

COMPARATIVE OPERATING COSTS*

| | With U.S. Subsidy | Without Subsidy | Norway | Japan |
|---|---|---|---|---|
| Wages | 26.8% | 14.6% | 21.7% | 19.5% |
| Fuel | 12.5% | 22.8% | 23.5% | 26.3% |
| Overhead | 9.7% | 17.5% | 13.6% | 17.4% |
| Capital Costs | 40.1% | 35.1% | 17.8% | 24.2% |
| Other Costs | 10.9% | 10.1% | 23.4% | 12.6% |
| Total | 100.0% | 100.0% | 100.0% | 100.0% |

*Source: "Selected Commodity Unit Costs for Oceanborne Shipments"
U.S. Department of Commerce

Considering non-subsidized operations, even higher speeds are justified. In fact, it can be easily shown that an increase in speed of 2-3 knots above that of foreign competition on the trade route will often lead to an appreciable closure of the competitive cost gap. While without subsidy a 25-knot fast turnaround ship has a total fuel-plus-crew cost per ton mile equal to that of a 20-knot ship of the same deadweight capacity, the fuel-plus-crew costs of the higher speed ship per ton mile is over 50% higher after subsidy.

All the above considerations indicate that our current subsidy system falls short in meeting its objectives.

As shown in Fig. 2.1, all the subsidized operators combined had a total revenue of about $800 million in 1965. This revenue is made up of about $500 million earned by carrying commercial cargoes, while the remaining $300 million were earned from government-generated cargoes (see Section 6). Yet during the same year the government spent about $300 million on subsidies (COS and ODS). In other words, subsidized operators obtained a total of $600 million in subsidy and cargo revenues (which includes indirect subsidies) to enable them to earn $500 million from commercial sources. The government cargo revenue includes about $4.6 million of differential and other cargo preference advantages. If we assume that CDS and ODS are really additional revenue if we compare subsidized and unsubsidized operations, then 54.5% of all the revenue of subsidized operators originates from the federal government.

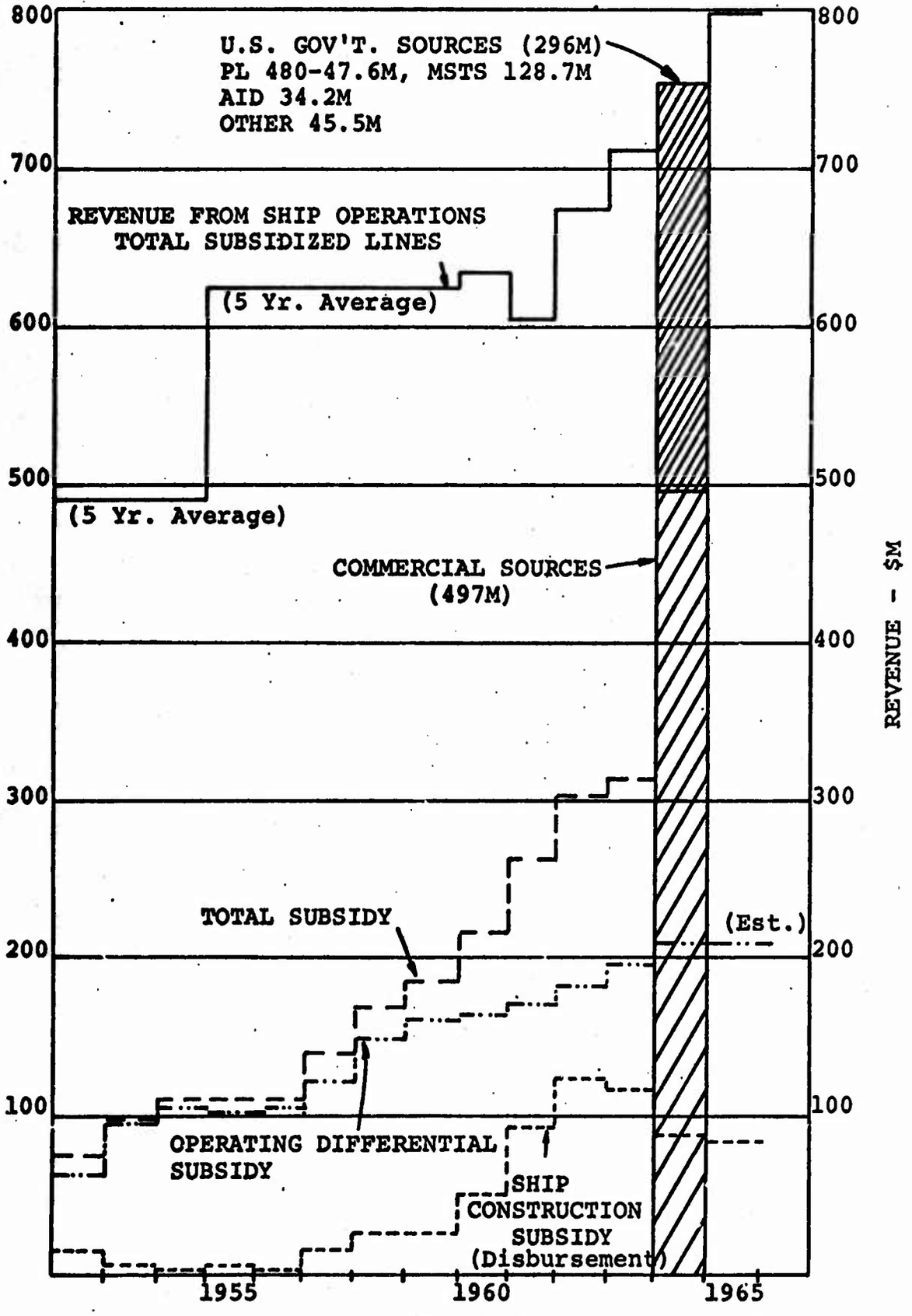



Fig. 2.1
Revenue of U.S. Subsidized Lines from Ship Operations and Federal Subsidies

If we next include the unsubsidized operator, the total participation of the government in the revenues of the U.S. dry cargo merchant marine reaches the staggering value of 68%. Is it therefore surprising that this industry is completely beholden to government and shows with rare exception no sign of independent, imaginative initiative and action?

Direct subsidies available to qualified subsidized operators consist of:

1) Construction Differential Subsidy.

2) Operating Differential Subsidy.

In addition, subsidized operators benefit by certain tax advantages acruing to the reserve or ship replacement funding programs. Indirect subsidies provided for subsidized and non-subsidized operators consist of various cargo preference and differential freight rate provisions as discussed in Section 6. Hidden subsidies available to non-subsidized operators are contained in the provisions of the "Exchange Program Law" and "Trade-In Law 1936" Act, Sect. 510a-d and Sect. 510i respectively. These provisions have enabled many non-subsidized operators to maintain effective shipping capacity at little cost to themselves and major expenditure to the government.

## 3. OPERATING DIFFERENTIAL SUBSIDY

Various requirements, as highlighted in Appendix A, are imposed on a carrier for eligibility for an operating differential subsidy. These requirements relate to particular financial aspects of the carrier's operation, the corporate structure, operating practices, and, most importantly, routes served over the years. The number of subsidized carriers have varied from a low of about 7 to a high of about 17 or 18. In recent years, the number of subsidized companies has typically been between 14 and 16, operating among them 220 to 300 ships, excluding chartered vessels. Thus, the subsidized components of the U.S. Merchant Marine dry-bulk cargo fleet constituted anywhere between 37 to 46% of all privately owned dry-cargo and passenger vessels. It should be pointed out that all United States foreign-going passenger vessels have been subsidized since 1936.

The most important requirement for obtaining operating differential subsidy is that the operator must serve what is termed"essential trade route". This is usually defined as a route between ports in the United States coastal area or areas and foreign markets which have been determined by the Maritime Administration to be essential for the promotion, development, expansion, and maintenance of the foreign commerce of the United States. Although some changes in the number and structure of essential trade routes, defined as above, have been made since the early days of the Merchant Marine Act of 1936, the large majority of these routes have not changed. It is doubtful if the current distribution of essential trade routes really represents the meaning of the definition of such routes, particularly from the point

of view of promotion, development, and expansion of foreign commerce. It appears that the maintenance of the essential trade route pattern is designed more to sustain established U.S. commerce and shipping interests, without any effort toward the promotion, development, and expansion of foreign commerce of the United States, which is the real aim and purpose of the Act and the operating differential subsidy. This purpose is furthermore encumbered by the added requirement that the operator must be prepared to offer regular, certain, permanent, and adequate service on one or more essential trade routes. As a result, shipping capabilities offered by the American-flag companies on their essential trade routes are defined by the Maritime Administration under its statutory authority. Although the Maritime Administration continuously review the number of voyages required on each trade route and sometimes permits them to fluctuate over a wide range, this requirement obviously introduces a factor which diminishes control as well as the initiative of the operator in his own venture. It should be noted that the time between application and authorization for reduced or increased frequency of sailing may be the multiple of inter-departure times. It is also curious to note that, with very few exceptions, only single U.S. operators are permitted to serve a particular essential trade route. This factor, combined with the fact that a major portion of the cargos carried by American-flag operators are government-generated and therefore must be carried in U.S. bottoms, introduces a positive monopolistic trend. In fact, the main customer of the U.S. dry-cargo Merchant Marine, the United States Government, has, in most instances, no choice or alternative in the shipment of its goods or the placement of charters for service on a particular route.

Some exceptions to this rule have been introduced by the increasing aggressiveness of some unsubsidized operators. On the whole, though, it must be said that operating differential subsidies have led to a lack of incentive, adherance to conference rates, and a general attitude of reliance on government decisions, government responsibility, and government funding.

Considering ODS alone, it can be seen from Fig. 3.1 how the operating-subsidy-to-revenue-dollar ratio has gradually increased to about 28% for cargo ships and 50% for passenger liners. In other words, the federal government pays as much per passenger to keep U.S. flag passenger liners at sea as the average passenger pays in fares. Figure 3.2 indicates how the subsidy-to-revenue ratio varies with the trade area.

The total operating differential subsidy, which was just over $100 million in 1957, has increased to over $200 million by 1967 although the total number of ships under subsidy has not increased substantially. In fact, considering again the subsidy/revenue ratio, it may be said that the federal government gets only about half the revenue-earning productivity per subsidy dollar as compared to ten years ago. This ratio is obviously far in excess of the inflationary trend which would only account for a cumulative increase of 67.2% (based on steady revenue). As a result, we may say that the ODS not only compensates for increased costs of operation but, in a way, also takes up the slack in the proportionately lower revenues.

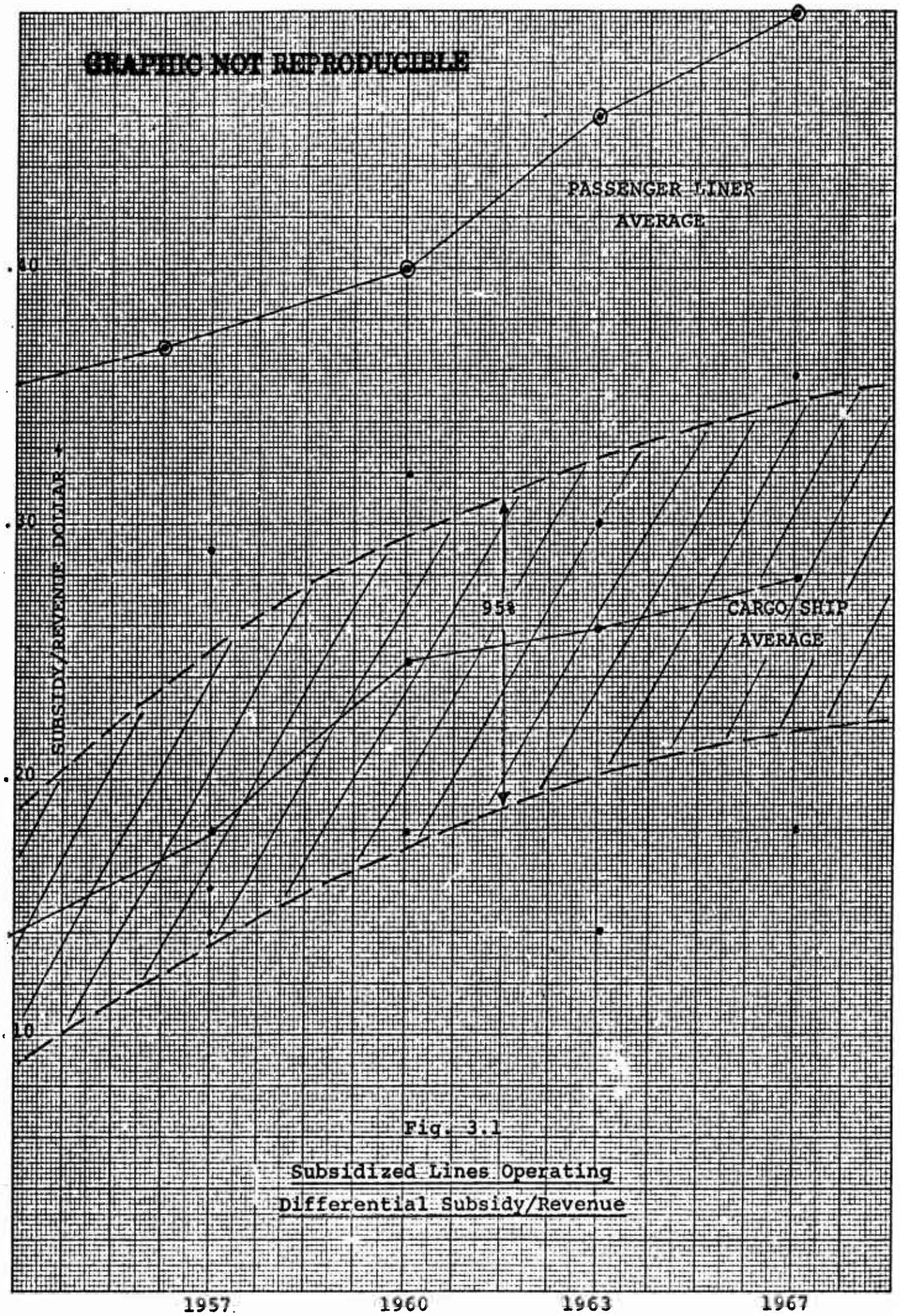



Fig. 3.1

Subsidized Lines Operating

Differential Subsidy/Revenue

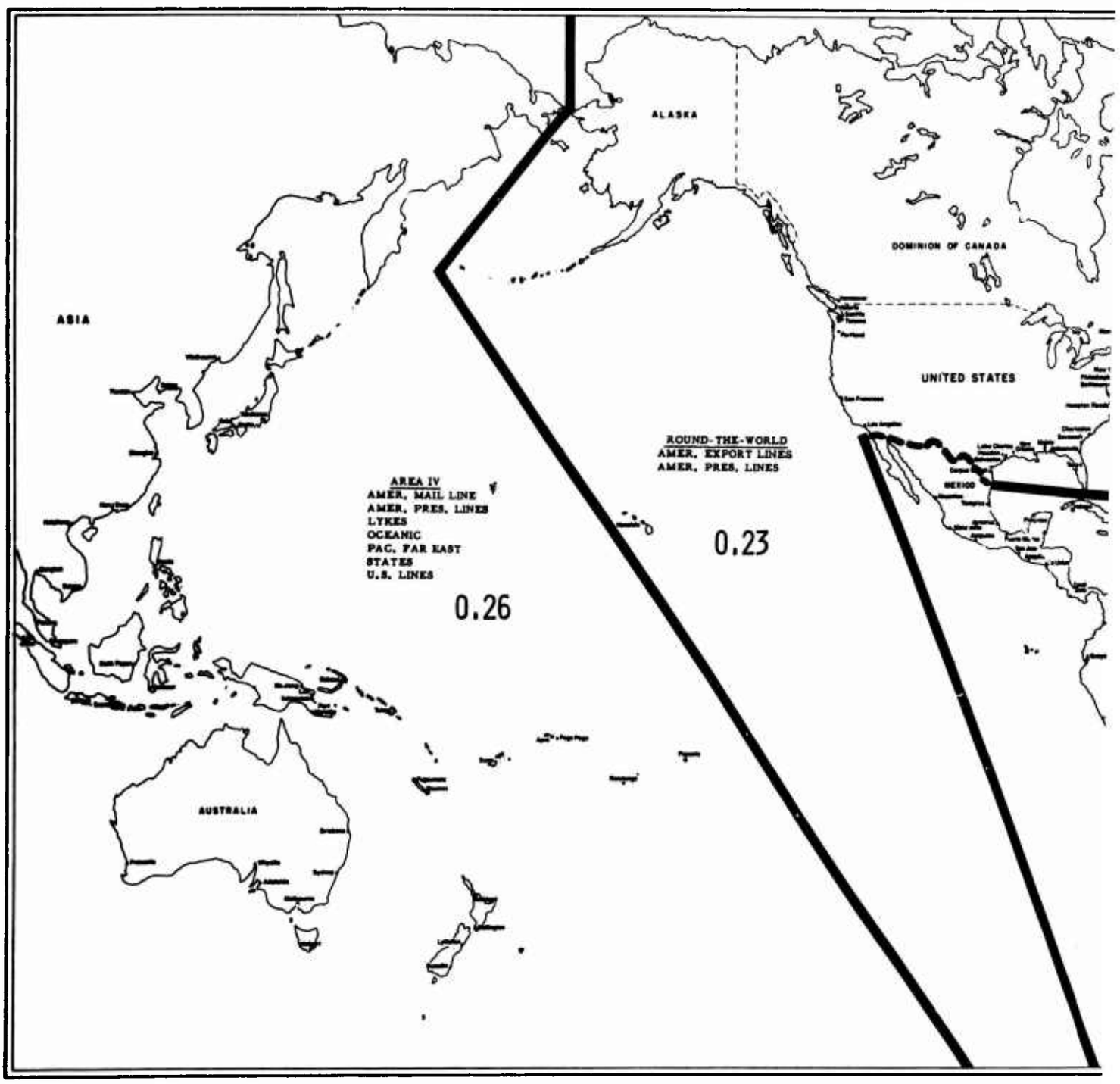
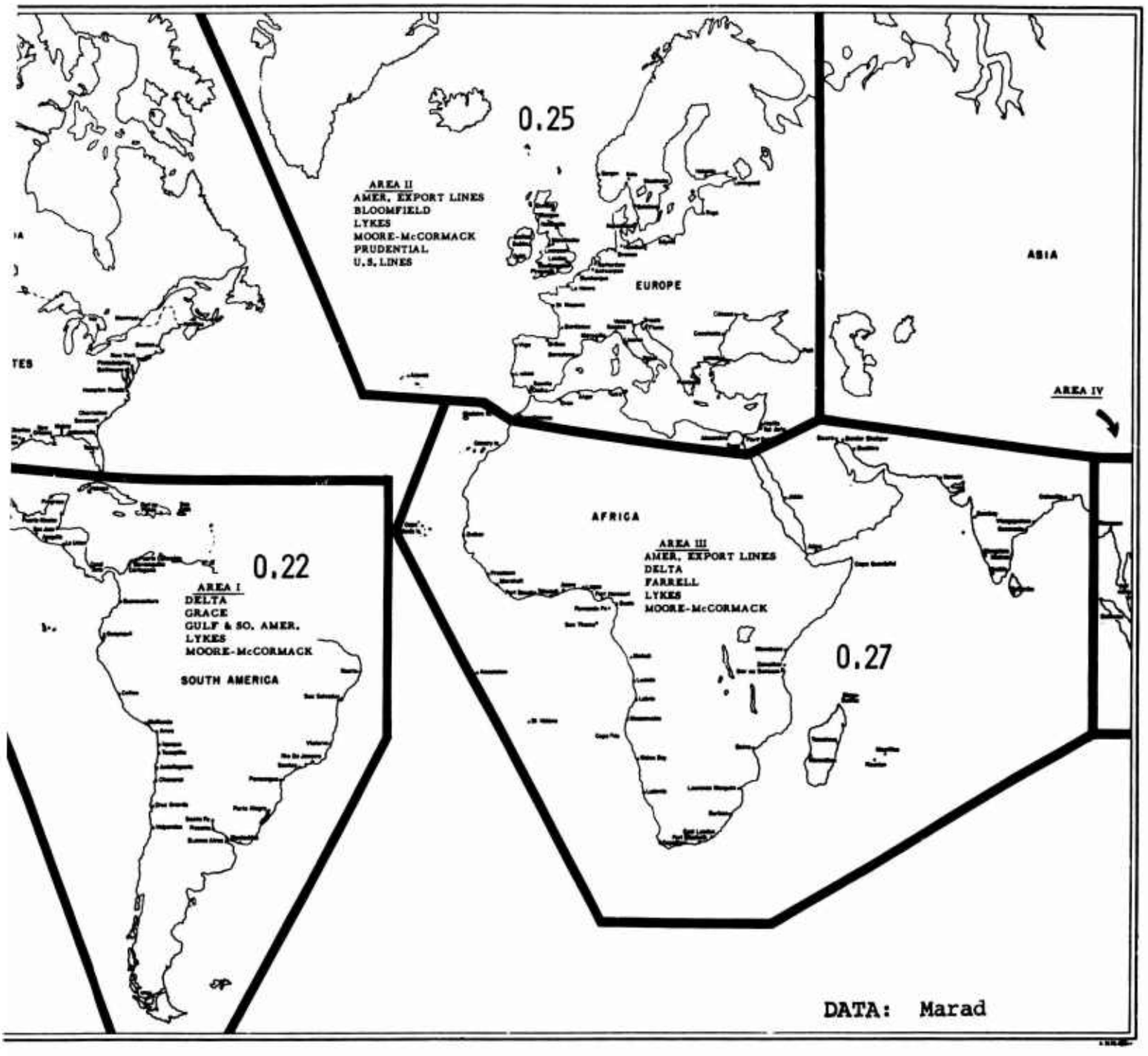

ALASKA
DOMINION OF CANADA
ASIA
UNITED STATES
ROUND-THE-WORLD
AMER. EXPORT LINES
AMER. PRES. LINES
0.23
AREA IV
AMER. MAIL LINE
AMER. PRES. LINES
LYKES
OCEANIC
PAC. FAR EAST
STATES
U.S. LINES
0.26
AUSTRALIA

FIG. 3.2

A




**Operating Differential Subsidy/ Revenue Average per Trade Area**

B

## 4. CONSTRUCTION DIFFERENTIAL SUBSIDY

Construction differential subsidy for qualified operators only became a major factor in U.S. ship construction in 1956. Although such subsidy had been authorized by the Merchant Shipping Act of 1936, conditions prevailing during World War II and the years immediately following did not encourage large-scale utilization of these rulings. The U.S. Merchant Marine was the most modern and the largest at the conclusion of World War II and, therefore, little or no merchant ship construction was required to maintain active U.S. shipping. In fact, a large number of shipyards were shut down, while others reduced their activities. The first major, government-supported shipbuilding program was started during the Korean War, with the construction of a substantial number of Mariner-type ships under government auspices. These ships were built to government design and specifications and sold to private industries at foreign purchase costs. Although U.S. ship operators resented many of the advanced features of these ships, such as high-speed capability and large size, which were incorporated as defense features at the time, most operators soon recognized the commercial value of these features and utilized the ships to the full extent of their capabilities.

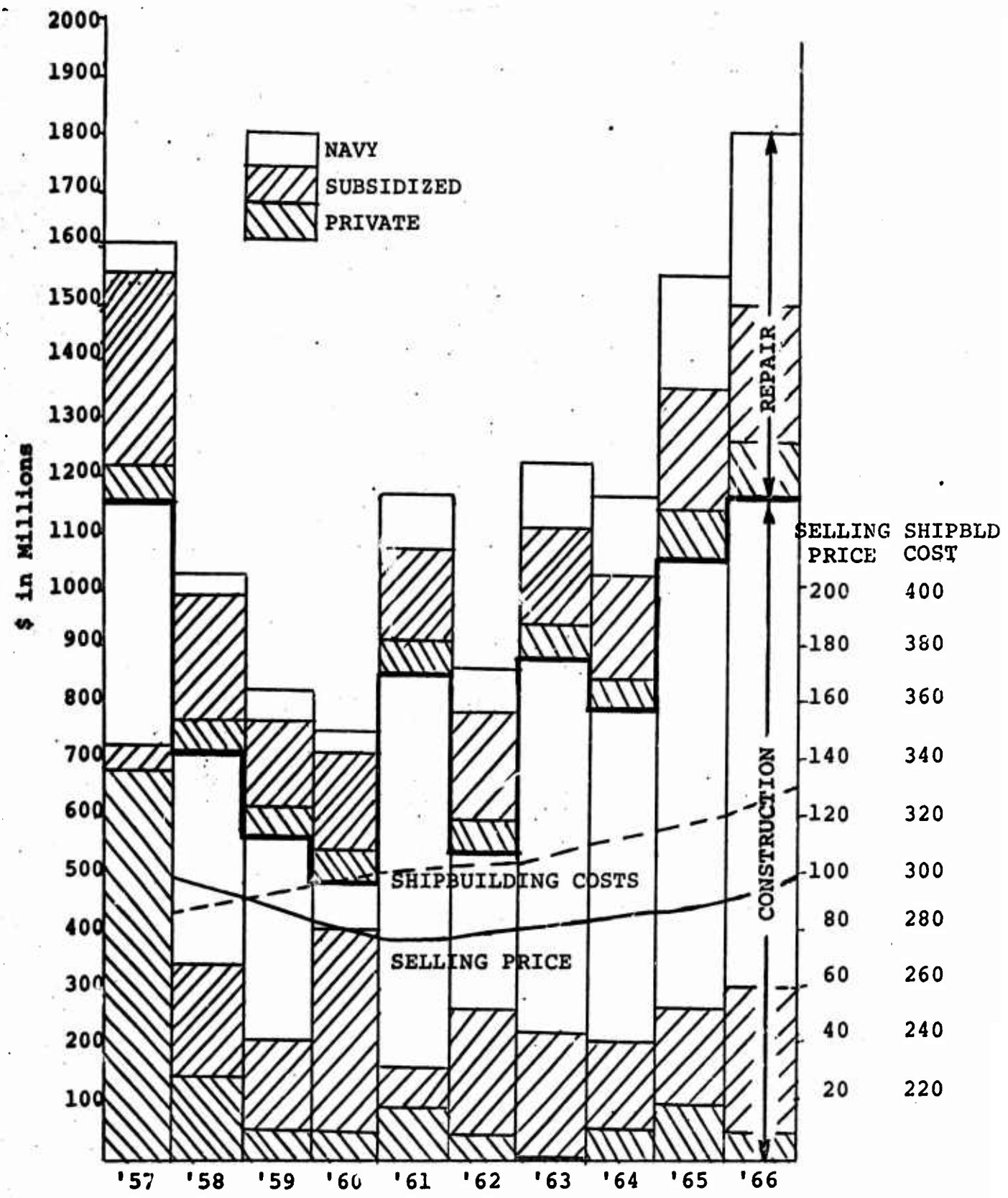
In 1956 it was suddenly recognized that the United States had lost its place of predominance, not only in shipbuilding but also in ship operation, and a large number of commercial orders, valued at over $700 million, were placed. This was largely the result of after-effects of the Suez crisis, although certain aspects of the Foreign Ship Sales Act also affected ship orders. Under this Act foreign operators acquiring U.S.-built tonnage,

constructed with government participation, are obliged to replace such tonnage with equal U.S.-built tonnage whenever they relinquish control of such ships.

In 1957, as the result of the above two reasons, over $670 million in commercial ship sales were placed by private, nonsubsidized operators. Since this pericd the amount of privately financed shipbuilding has diminished to an average of less than $60 million per year since 1958. Only in 1958 and 1965 did such sales approach the $100 million level.

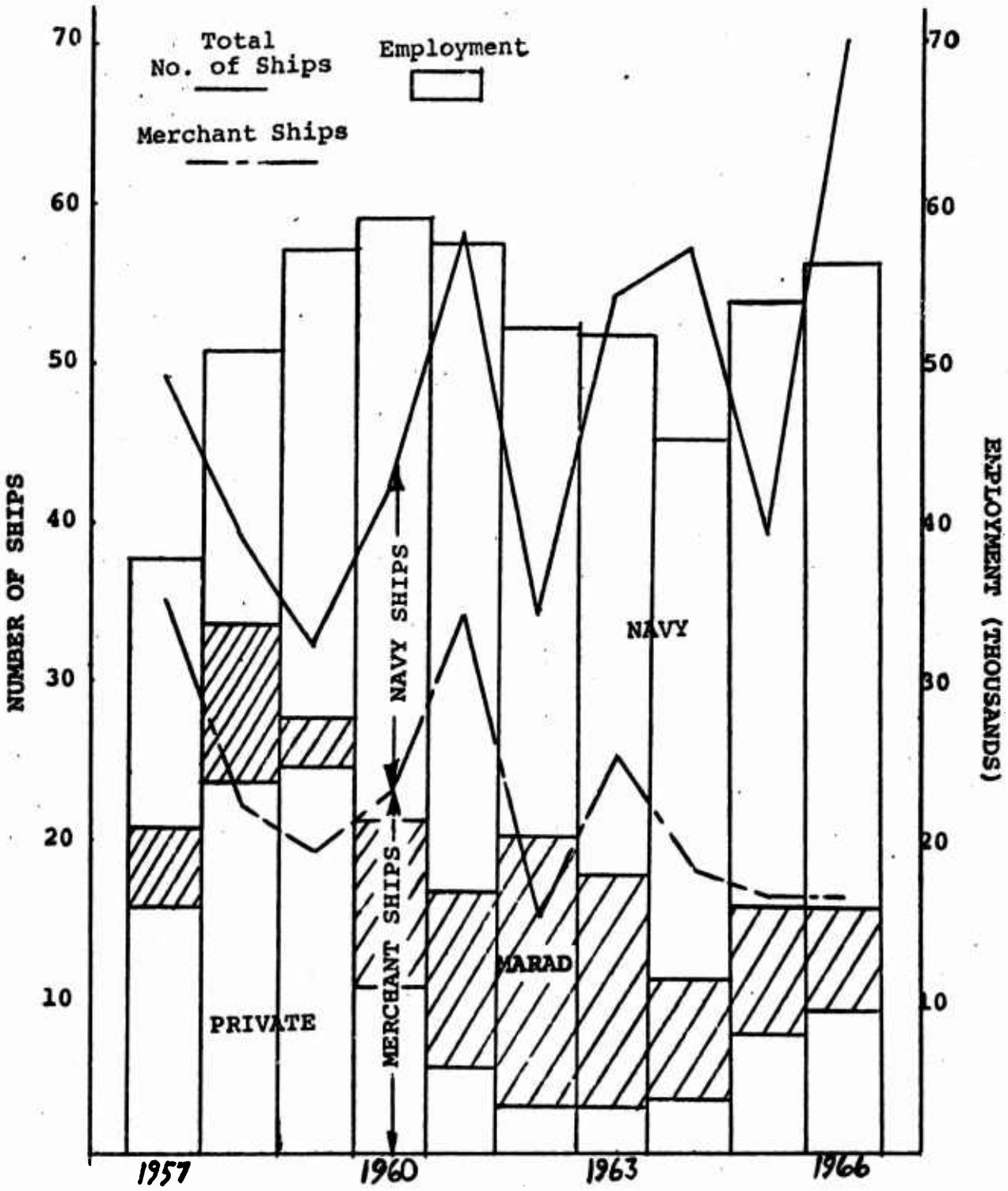
Since 1958 the bulk of commercial ship construction in the United States has been financed by subsidized sales which constituted about 77% of all commercial ship sales by U.S. shipbuilding industry, for an average of $200 million in ship sales. The amount of shipbuilding subsidy varied from 48% to 55% during this period and averaged 51.2% during the ten-year span, 1957-1967. Figure 4.1 indicates the private and subsidized dollar volume of shipbuilding in the United States during that time period, while Figure 4.2 shows the distribution of dollars of ships ordered and the resultant employment.

In total, the U.S. Government has paid close to $1 billion in ship construction subsidy since World War II. These subsidies were designed to maintain competitiveness of the U.S. Merchant Marine and shipbuilding industries. In fact, as discussed in Chapters 7 and 8, the result was contrary to expectations. Construction subsidy has largely eliminated incentives and resulting growth of both industries and, furthermore, it introduced a measure of ineffectiveness in procurement and production. In fact, subsidy structure




Private, Subsidized and Navy Work
Dollar Value of Awards (Construction & Repair)
and Index of Estimated Shipbuilding Cost and Selling Price

Fig. 4.1




Ships Ordered from Major Private U.S. Shipyards
and Resultant Employment
*(Vessels of 1,000 gross tons and larger)*

Fig. 4.2

and the fact that U.S. shipbuilding derives over 90% of its total sales volume from government-supported or government-placed orders has resulted in a lack of investment and advanced management engineering. In a way the industry can be said to operate in a wholly protected market with very little competition. Where competition exists, it is only among a very small number of competing shipyards whose productivity and capabilities are about equal.

As shown in Report No. 69-15, entitled "Study of U.S. Shipbuilding Capability and Requirements", M.I.T., the large cost differentials between U.S. and foreign shipbuilding, which are normally quoted as reasons for the requirement of subsidy payments, can be shown to be very much less, if we consider labor cost differential alone. It can be easily seen that the major cost differentials incurred are not at all due to differential labor rates but are the effect of differential material cost and differential productivity. While the first implies indirect subsidy to other manufacturing industries who may only be peripherally involved in supplying U.S. shipbuilding, the latter is a result of under-utilization of potentially available capital. The cost of capital in this country is generally less than that abroad and it is, therefore, surprising that little use has been made of capital intensity for the improvement of building productivity. Considering government involvement, it can be easily shown that over $600 million of federal funds have been expended in indirectly subsidizing other manufacturing industries through the machinery of ship construction subsidies. Less than $400 million were required during the ten-year span under consideration for payment of the labor cost differentials.

## 5. EXCHANGE AND TRADE-IN PROGRAMS

Several factors provide additional aid to merchant shipping which are not generally recognized. These fall primarily under the 'Ship Exchange Program', which by Public Law 86-575 provides for vessel exchange between the government and non-subisdized operators, and the 'Ship Trade-In Program' under the Merchant Marine Act of 1936 (as amended), by which U.S. flag subsidized operators are required by law to replace their berth cargo liners at age 25 years. They also acquire the right to trade in their obsolete vessels to the government.

Under the Ship Exchange Program operators are permitted the exchange of certain war-built vessels under various financial adjustments and arrangements, for more effective vessels in the Maritime Administration's Reserve Fleet. The purpose of this program is to assist in the upgrading of the non-subsidized part of the U.S. Merchant Marine, which implies mainly the tramp fleet. From the first 'exchange' in 1961 to December 1966, a total of 58 ships were traded in and 54 vessels were transferred out. Considering these transactions in detail, it is noted that 72.5% or 42 of the 58 trade-in vessels were subsequently scrapped or classified as scrap ships. Over 31% of the trade-in vessels were Liberty types, while practically all the transferred vessels were Victorys, C-2 or C-4 type ships. The Ship Exchange Act was extended to July 5, 1970, and amended in 1965 to permit trade-out of tankers and trade-in of older ships than previously allowed. Since December 1966 practically all

remaining T-2 tankers and C-4 cargo and troop-carrier ships have been traded out under the program. The majority of this latter category was converted to container ships.

The exchange program has had two major results from the government's point of view:

1) It reduced appreciably the transportation effectiveness of the National Defense Reserve Fleet.

2) It resulted generally in a net monetary loss to the government.

Table 5.1 shows how the program affected the content of the reserve fleet. It is noted that during the period 1961-65, 38 better class and often never used merchant ships left the fleet and were replaced by 28 Liberty ships. An additional 15 better class ships were replaced by similar type ships, but in appreciably poorer condition. The trend shown in this table has continued and is currently accelerating. Under these conditions it can be assumed that all the remaining better class ships in the reserve fleet, most of which are now serving as reactivated vessels under GAA in the Vietnam supply line, will be exchanged on their return to the fleet within a few years, leaving a reserve fleet made up of largely scrap vessels.

Financially, similar adverse effects occur under the program. The law governing the determination of the value of a vessel for Exchange and Transfer purposes may be computed:

a) By using the scrap value of the obsolete ship in both the U.S. and foreign market (hardly ever used).

## Table 5.1

QUALITATIVE EFFECTS OF SHIP EXCHANGE PROGRAM
OF THE RESERVE FLEET

Percentage of Exchange Ships Scrapped

| | Directly | Indirectly* | Total |
|---|---|---|---|
| 1961 | 25% | 60% | 85% |
| 1962 | 20% | 60% | 80% |
| 1963 | 16% | 37% | 52% |
| 1964 | 0% | 0% | 0% |
| 1965 | 50% | 0% | 50% |

*Indirectly refers to a vessel entering the Fleet and then being sold for scrap.

Transactions of Ship Exchange Program

| | Entering | | Traded Out | | Net | |
|---|---|---|---|---|---|---|
| | Liberty | VC or Better | Liberty | VC or Better | Liberty | VC or Better |
| 1961 | 4 | 0 | 0 | 8 | 4 | -8 |
| 1962 | 4 | 0 | 0 | 5 | 4 | -5 |
| 1963 | 13 | 0 | 0 | 15 | 13 | -15 |
| 1964 | 6 | 12 | 0 | 18 | 6 | -6 |
| 1965 | 1 | 3 | 0 | 7 | 1 | -4 |
| Total | 28 | 15 | 0 | 53 | 28 | -38 |

b) By applying a depreciated value based on a 25-year life.

c) By applying "The Market Value thereof for operation or in the foreign or domestic trade of the U.S."

The last of these methods is the most commonly used and results in the net monetary loss to the government.

When it has been adjudged by a survey team chosen and agreed upon by the government and the private party, that the Exchange Ship is ready for scrap, the vessel is directly scrapped, and the money obtained from the scrapping is accredited towards the payment for the transfer ship. If on the other hand it has similarly been decided that the exchange ship is suitable as an entry into the NDRF (Reserve Fleet), the "fair and reasonable value" for it is computed as the average between the current 'Restricted World and Domestic Prices' which is a policy interpretation of the third rule noted above.

Actually, there are three distinct fair and reasonable valuations applied to these transactions: 1) Unadjusted Exchange Ship value, 2) Unadjusted Transfer Ship value, and 3) adjusted values of both categories of vessels*. The unadjusted Exchange Ship value is equal to the above-mentioned computation. The unadjusted Transfer Ship value is equal to the average of the current Restricted World and Domestic prices minus an estimate of costs required to bring the Transfer Ship into class. The shipowner pays for the class work, the cost of which is deducted from the current average market value of the vessel. Upon the execution of

*Contract No. MA-2807, Maritime Administration, October 1961.

the exchange the positive difference of the Transfer Ship unadjusted value is paid to the government. An adjustment period ensues during which time both vessels are inspected for hull damages and the Exchange Ship is deactivated. The costs accrued during this period are used to adjust the values of the vessels, resulting in a final adjusted fair and reasonable value for the vessel. The cost for repairing "unknown" hull damages for each ship is deducted from the unadjusted prices. The cost of deactivation is added to the unadjusted price of the Exchange Ship.

If a positive difference exists, when subtracting the adjusted fair and reasonable price of the Exchange Ship from the adjusted fair and reasonable price of the Transfer Ship and if this positive difference is in excess of the amount which the shipowner has already paid, the shipowner pays the government an amount of money equal to this excess; if the positive difference is less than the amount already deposited by the shipowner with the government, he is reimbursed the quantity by which his payment exceeds the positive difference.

As an example, the unadjusted fair and reasonable value of an outgoing Victory ship (in 1965) is $140,000 ($440,000, computed market value, -$300,000, cost of class repair work). The shipowner's financial responsibility toward the government is $140,000, the unadjusted fair and reasonable price. As a trade-in vessel the shipowner uses a Liberty ship valued on the market at an average price of $250,000, the unadjusted fair and reasonable price. The values are now adjusted, assuming no hull damages of

both ships, the Transfer Ship's value remaining the same, the Exchange Ship's value increasing by $10,000, the deactivation costs. The Exchange Ship's adjusted fair and reasonable value is now subtracted from the Transfer Ship's adjusted fair and reasonable value; the difference is -$120,000, a negative value, which may be interpreted as the government owing the shipowner $120,000.

The law forbids the government from making any payment to the shipowner as a result of any exchange transaction. Therefore it appears that the shipowner has lost money to the government, i.e., the government has acquired a $260,000 vessel for a $140,000 one, since the Victory was not in class as an NDRF vessel and was not worth the market value. This argument is falacious since the owner exchanged a Liberty ship which under normal circumstances was virtually out of class for a Victory vessel newly surveyed and brought into good operating condition. He adds the amount required for reactivation. In most cases the trade-in or exchange ship is in complete disrepair, a thesis supported by referring to the table of scrapping percentages. There it can be seen that the number of vessels scrapped in the Exchange Program is quite high, and the number scrapped indirectly after acquisition for a fair and reasonable market value is much higher than those scrapped directly.

When a vessel is scrapped indirectly, it is initially put into the Reserve Fleet, where it is considered to be operationally sound; later it is taken from the fleet for scrapping. Referring to the Table of the Scrapping Financial Transactions in the Exchange Program, it is obvious that the scrapping of these vessels

EXCHANGE PROGRAM TRANSACTIONS

| Year | Ship Type | No. of Ships | Status* | Total Exchange Price | Total Scrap Price | Total Net Loss to Government |
|---|---|---|---|---|---|---|
| 1961 | EC-2 | 5 | 5-RF | $1,310,000 | $281,579 | $1,028,421 |
| | T-2 | 3 | 2-S | 292,690 | 192,690 | |
| | | | 1-RF | 365,000 | | |
| 1962 | EC-2 | 3 | 2-S | $ 464,000 | $ 95,672 | $ 368,328 |
| | | | 1-RF | 232,000 | | |
| | ZET-1 | 1 | 1-S | 232,000 | 46,000 | 186,000 |
| 1963 | ZET-1 | 1 | 1-S | $ 240,000 | $ 45,330 | $ 194,670 |
| | C-1 | 10 | 6-S | 1,797,500 | 375,182 | 1,422,318 |
| | | | 4-RF | 1,368,000 | | |
| | VC-2 | 2 | 2-RF | 810,000 | | |
| | T-2 | 3 | 1-RF | 360,000 | | |
| | | | 2-S | 304,671 | 304,671 | |
| | EC-2 | 3 | 2-S | 480,000 | 179,562 | 300,438 |
| | | | 1-RF | 240,000 | | |
| 1964 | EC-2 | 6 | 1-BB1 | $ 253,000 | | |
| | | | 5-RF | 1,265,000 | | |
| | C-3 | 2 | 2-BB1 | 1,466,000 | | |
| | T-2 | 1 | 1-BB1 | 408,000 | | |
| | C-2 | 3 | 1-BB1 | 475,000 | | |
| | | | 1-AF | 475,000 | | |
| | | | 1-RF | 475,000 | | |
| 1965 | C-2 | 9 | 2-RF | $ 950,000 | | |
| | | | 5-BB1 | 2,441,000 | | |
| | | | 2-AF | 950,000 | | |
| | ZET-1 | 1 | 1-BB1 | 263,000 | | |
| | EC-2 | 2 | 1-S | 150,000 | $150,000 | |
| | | | 1-BB1 | 263,000 | | |
| | T | 2 | 2-S | 344,250 | 344,250 | |
| | T-2 | 1 | 1-S | | | |

*S--Scrapped
RF--Reserve Fleet
AF--Active Fleet
BB1--Conditional Bareboat Charter

Fig. 5.1

takes place from zero to two years after their inception into the Reserve Fleet. It is improbable that the status of an inactive vessel, initially in operational condition, would change radically in a two-year period. Therefore, it must be assumed that the ship entered the Fleet in poor condition.

Financially, the loss to the government is the difference between the fair and reasonable price paid to the shipowner and the scrap money received by the government. These differences are recorded as negative values in the Table of Scrapping Financial Transactions to show that they are deficits, as are the prices paid out for the vessels. When a ship was directly scrapped there was obviously no deficit. The average yearly monetary losses to the government are:

Table 5.2

AVERAGE PER SHIP ANNUAL LOSS TO GOVERNMENT THROUGH THE SCRAPPING OF EXCHANGE SHIPS

| | Average Value |
|---|---|
| 1961 | $205,684 |
| 1962 | $182,328 |
| 1963 | $239,678 |
| 1964 | 0 |
| 1965 | 0 |

Total accumulated loss for 5 years: $3,128,175.

In addition to the effects caused by the indirect scrapping process, the shipowner may take advantage of the method in which the unadjusted fair and reasonable value of the Transfer vessel is computed to obtain a more valuable vessel than that for which he has paid. Any trader of U.S. flag vessels would have a difficult time selling a U.S. vessel in a world market because of the many

restrictions the U.S. puts on the transfer of these ships. Therefore, if such a trader contemplated selling a vessel, he would look in the domestic market for a ready buyer. Upon close observation of the two graphs, Domestic Vessel Prices and Restricted World Vessel Prices, we see that the domestic price of a ship is, in general, higher than the price of the same class of ship in the restricted world price. Since the shipowner's transfer ship's price is computed on the basis of the average of two market prices, he will have an automatic financial gain when he receives the ship, since the price he paid for the vessel would be below the domestic price by an amount equal to half the difference between the domestic and restricted world prices. This amount of money may be construed as a loss to the government for, if the government wished to purchase the same exact vessel the same year for its own account, it would most probably have to purchase it at the domestic price.

The following conclusions may be drawn from the arguments presented here:

The Exchange Program produces a compounded effect which seriously affects the capability of the NDRF to serve its mission of being an emergency pool of ships by replacing usable VC2, C3, T2, and C4 type vessels with Liberty ships which may or may not be in usable condition.

The government takes a direct financial loss as a result of the Exchange Program caused by the method of computing the fair and reasonable value of the transacted vessels, the inequities of the scrapping program applied to Exchange Ships, and the reduction of the price charged for the Exchange Ship by the amount of the reactivation costs.

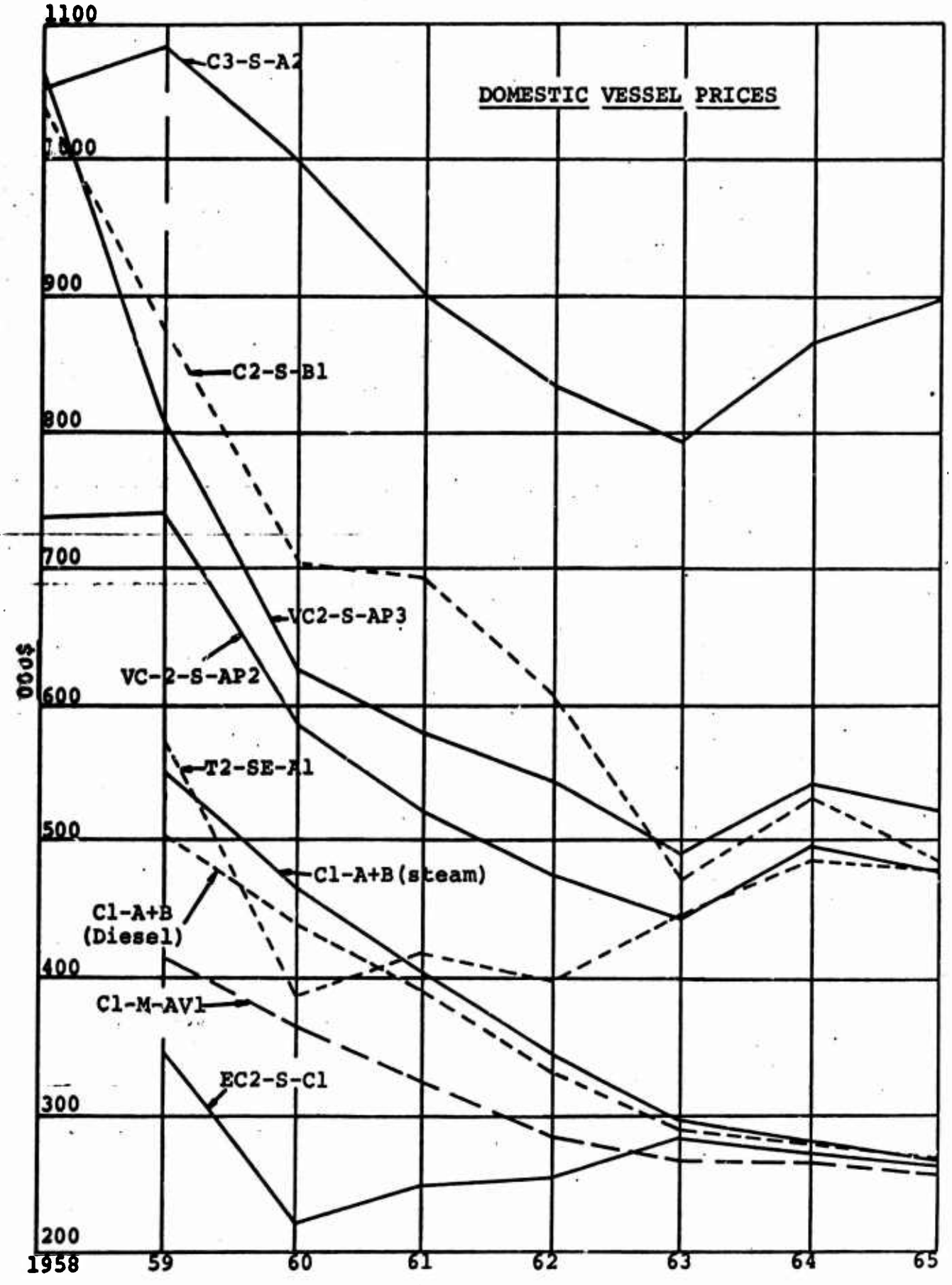

DOMESTIC VESSEL PRICES
1100
1000
900
800
700
600
500
400
300
200
$000
1958
59
60
61
62
63
64
65
C3-S-A2
C2-S-B1
VC2-S-AP3
VC-2-S-AP2
T2-SE-A1
C1-A+B(steam)
C1-A+B
(Diesel)
C1-M-AV1
EC2-S-C1

Fig. 5.2

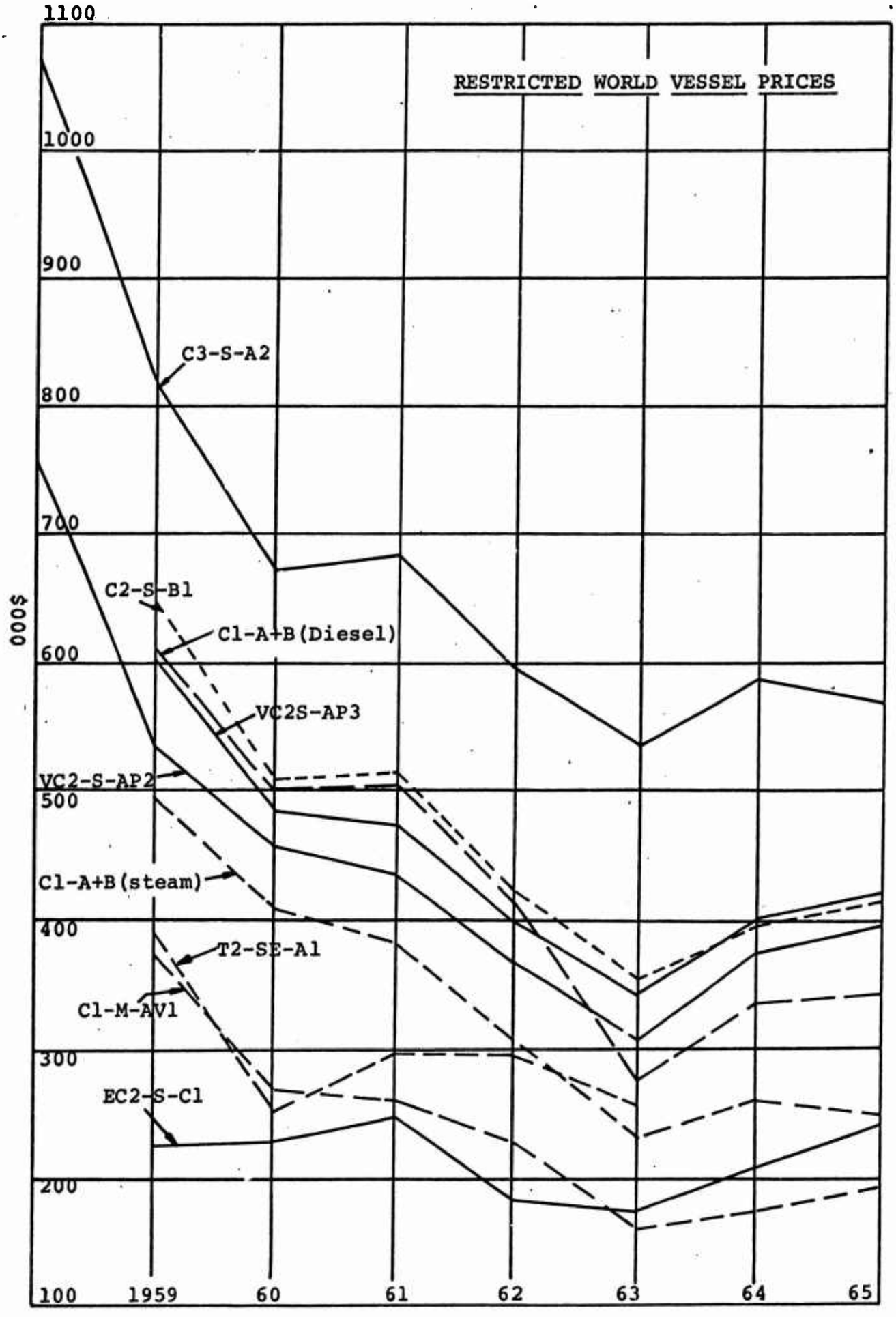

RESTRICTED WORLD VESSEL PRICES
1100
1000
900
800
700
600
500
400
300
200
100
$000
C3-S-A2
C2-S-B1
C1-A+B(Diesel)
VC2S-AP3
VC2-S-AP2
C1-A+B(steam)
T2-SE-A1
C1-M-AV1
EC2-S-C1
1959
60
61
62
63
64
65

Fig. 5.3

With the broadening of the law to include other than war-built ships and permitting tankers to be withdrawn for Great Lakes, etc., liquid bulk or general non-petroleum product cargo carriage, the program will continue to afford operators profitable deals in upgrading their fleets. The cost of this program will continue to rise as a direct function of the increase of the difference of the realistic value of the transfer and exchange ships.

Under the Ship Trade-In Program a total of 107 ships were traded in to the government under individual contracts or sold to private shipowners with credit applied to new construction during the period 1958-65 (see Table 5.3). At the same time, 94 new ships were delivered from shipyards to the owners under the replacement program. Although the trade-in vessels are obsolete from the point of view of berth liner operators, they generally improve the standard of the reserve fleet and are attractive for Exchange Program transfers. While the 'Market Value' is generally determined in a similar fashion to the methods applied to the 'Ship Exchange Program' in determining the 'trade-in allowance', financial and other aspects of the applicant apparently play a role in the establishment of a 'fair value', as noted in comparative prices credited.

The table below is a compilation of the trade-in transactions. The percentage of these vessels which were scrapped is approximately 20%.

## Table 5.3

TRADE-IN TRANSACTIONS

| Trade-In Date | Design Type C-1 | VC-2 | C-3 | C-2 | P-1 Comb. | No. Scrapped | Total Traded In |
|---|---|---|---|---|---|---|---|
| 1958 | 10 | 4 | 3 | 2 | - | 1 | 19 |
| 1959 | 6 | - | 2 | 5 | 2 | 1 | 15 |
| 1960 | 1 | 4 | 2 | 8 | - | 4 | 15 |
| 1961 | 5 | 5 | 4 | 8 | - | 8 | 22 |
| 1962 | - | 1 | 1 | 12 | - | 2 | 14 |
| 1963 | - | - | - | 5 | - | 2 | 5 |
| 1964 | - | 2 | 2 | 7 | - | 3 | 11 |
| 1965 | - | - | 2 | 4 | - | 1 | 6 |
| Total | | | | | | 22 | 107 |

## Table 5.4

CONTRIBUTION OF TRADE-IN PROGRAM TO NDRF
(Excluding Tankers and Specialty Ships)

| | EC-2 & C-1 | VC-2 and Others |
|---|---|---|
| 1958 | 10 | 9 |
| 1959 | 6 | 7 |
| 1960 | 1 | 14 |
| 1961 | 5 | 17 |
| 1962 | 0 | 14 |
| 1963 | 0 | 5 |
| 1964 | 0 | 11 |
| 1965 | 0 | 6 |
| Total | 22 | 83 |

The government has spent to date approximately $64,458,000 on the trade-in program. For this amount of money it has obtained 83 obsolete ships of a class better than Libertys and C-1's. The percentage of vessels scrapped is relatively small compared to those in the Exchange Program while the percentage of vessels returned to active duty is comparatively large. Table 5.4 describing the trade-in program demonstrates this point.

The percentage of vessels which have been scrapped is about 20%; an additional 20% have been reactivated into service in the active fleet, while the rest are on a conditional bareboat charter or are in the Reserve Fleet. The government lost considerable sums of money in scrapping. The accumulated net loss to the government as a result of the trade-in scrap program is $7,853,296. Add this to $64,458,000 and the program ostensibly costs $72,311,296. But there are hidden costs not accounted for in these figures.

These vessels, by legal definition, are obsolete, and would probably require a considerable amount of class work to be done if they were to be used again. These class or activation costs are presently on the order of magnitude of $400,000 for a Victory. But the government paid a price of $505,000, the fair and reasonable price for a classed Victory, when it purchased the ship. Thus, if $400,000 worth of reactivation work is required, the ship was actually worth $105,000; the government lost $400,000 on the transaction. The exact cost figures are difficult to ascertain for the other vessels since many of these have not been reactivated. But a lower limit can be obtained by using the reactivation costs of

the Victory ship multiplied by the number of traded-in ships existing in the Reserve Fleet. There are 56 traded-in ships remaining in the Reserve Fleet which yield a reactivation cost figure of $22,400,000. This amount added to the previous sum of $72,311,296 yields a total of $94,711,296 for the program.

Though the trade-in program ostensibly results in a quality class vessel being put into the Reserve Fleet, the ships for the most part are probably obsolete. Therefore, though the Trade-In Program does not in theory deplete the Reserve Fleet in terms of modern types or efficient vessels, it certainly does seem that it costs more than it should. If the building program becomes intense, this effect would be pronounced.

## 6. INDIRECT SUBSIDIES AND AID TO THE MERCHANT MARINE

Over the years, agencies of the United States Government have become significant purchasers of ocean transportation. In general, federal agencies as users of ocean transportation are required by law to allocate at least half, and in some cases all, the needed ocean transportation to U.S. flag shipping. A large number of federal agencies have different programs generating needs for ocean transportation. The amount of such transportation purchased in any one year and by any one agency varies considerably. During the last decade, government purchasers of ocean transportation have increased with the general growth of U.S. economy and the large transportation requirements in Vietnam.

To analyze contributions made by these various indirect subsidies and aids by the federal government to the subsidized and unsubsidized segments of the U.S. Merchant Marine, a large amount of data and information is required. Unsubsidized operators do not need to maintain detailed records for submission to the Federal Maritime Agencies. Some difficulty was experienced in ascertaining the impact of government-generated cargoes and other aid on the total cargo-carrying and earning capacity of the U.S. Merchant Marine.

In this section we will use available data for the year 1964, and we will project from it the effect of these various programs and aids on the merchant marine and its buyability. Some data on the use of merchant marine to aid in the Vietnam war effort is

available for more recent years and has, therefore, been used to show government participation in overall shipping use.

Of approximately 960 U.S. flag ships of private ownership in 1964, 640 were engaged at some time in the carriage of government cargo. This number of ships includes practically all U.S. flag ships in foreign trade, as nearly 320 ships served the domestic trade or a near-domestic trade such as oil tankers in the Caribbean Sea. This fleet of ships carried a total of about 40 million long tons of cargo during 1964, of which the federal government generated nearly 25 million long tons or about 62%. Ships in the liner or scheduled service carried 7.3 million long tons of government-generated cargo which, therefore, amounted to about 44% of their total of 16.5 million long tons. Dry bulk and other tramps carried 10.5 million tons, of which 6.7 or 65% was government-generated cargo. Finally, privately owned tankers lifted 13.2 million tons, 10.7 of which was from government sources, which amounts to 81% of the total. During 1964, the total revenue produced by government-generated cargo amounted to $647 million, which includes payments made directly by the federal government for its own account and payments made by non-governmental concerns for transportation resulting from U.S. government loans, grants, or gifts.

As the statistic tables or drafts presented in a later part of this section indicate, the total involvement of participation of government cargo in the purchase of U.S. flag transportation has substantially increased since 1964.

There are a number of federal programs which produce revenue for U.S. flag ships. These include programs by the Department of Agriculture resulting from the sale or donation of agriculture commodities to foreign countries under Public Law 480. Similarly, foreign assistance programs generated by the agency for international development and commercial cargo resulting from purchases under export-import bank loans, U.S. Mail, and procurement of ocean transportation by various government agencies for their own purposes, all use U.S. flag ships under various sections of Federal Laws such as Section 901(b) of the Merchant Marine Act 1936, Public Law 664, The Act of 1904, Number 10 USC paragraph 2631 and Public Record 17 of 1934. The above-stated laws and regulations cover all types of services and the use of U.S. owned and operated merchant shipping from transportation of passengers and freight in liner service, voyage and time charters, irregular service, and tanker service.

In addition to the above-described use, the Military Sea Transportation Service utilized a large amount of U.S. Merchant Shipping to supplement the military nucleus fleet transportation of military supplies throughout the world. This last item accounts today for the major use of U.S. ocean tonnage and for over 50% of all ocean transportation revenues earned by the U.S. Merchant Marine.

Other forms of indirect subsidies or aid such as the allocation of mortgage insurance under Title XI which permits the federal government to insure ship mortgages up to 82% for passenger liners

and barges and 75% of their purchasing price for cargo ships. This form of aid has resulted in establishing facilities for credit at a relatively low cost for the U.S. Merchant Marine and reduced the requirement for the use of industry reserve funds.

During 1964 over $222 million were earned by the merchant marine through the carriage of agricultural cargoes to foreign countries under Public Law 480, while MSTS purchased $283 million in ocean transportation. AID spent $88 million and the export-import banks act provided in Public Laws 17 spent nearly $30 million. All other programs accounted for an additional $25 million for a total of $647 million spent for foreign ocean transportation services. It should be mentioned that the federal government spent an additional $23 million to purchase domestic ocean transportation services.

Of this total the sum of $244 million was spent for freight operations (excluding passenger and charter revenue) in the subsidized segment of the merchant marine. This amounts to 38% of the total freight revenue of the subsidized merchant marine and is made up of the following components:

| | Inbound | Outbound | Total |
|---|---|---|---|
| MSTS | 8% | 24% | 18% |
| PL 480 | 1% | 11% | 7% |
| AID | 1% | 8% | 5% |
| U.S. Mail | - | 2% | 2% |
| Other Government | 2% | 7% | 6% |
| % of Total Revenue | 12% | 52% | 38% |

In other words, 12% of the total inbound cargo revenue of $225.8 million and 52% of the total outbound cargo revenue of $418 million were earned from government ocean transportation by the subsidized operators.

There are large variations in the percentage of revenues obtained from government-generated cargoes among subsidized operators. Some received less than 10%, while for others it accounts for 80% of their revenue. These variations are largely affected by the trade routes served and the political or military conditions affecting government programs or policies.

An analysis of the percentage participation of government ocean transportation costs in the revenues of the unsubsidized segment of the U.S. flag foreign trade fleet is more difficult, as these operators are not required by law to submit the same amount of detail on the financial breakdown of their operations.

Table 6.1

U.S. SHIPPING, GOVERNMENT-GENERATED AND COMMERCIAL CARGO PARTICIPATION

| | No. of Ships | Total L.T. x $10^{-3}$ | Commercial x $10^{-3}$ | Government x $10^{-3}$ |
|---|---|---|---|---|
| Berth Service | | | | |
| Subsidized | 315 | 12,270 | 8,485 | 3,785 |
| Unsubsidized | 136 | 4,232 | 721 | 3,511 |
| Tramp Service | | | | |
| Dry Bulk Ships | 121 | 10,456 | 3,714 | 6,742 |
| Tanker Service | | | | |
| Dry Bulk (Grain) | 67 | 13,224 | 2,543 | 10,681 |
| Total | 639 | 40,182 | 15,463 | 24,719 |

As shown in Table 6.1, 30.8% of the long tons moved by all the subsidized operators and about 38% of their revenues were obtained from government-generated cargoes. Although the average value of the government cargo was lower than that of the commercial cargo carried, the cargo revenue per unit was larger from government-generated cargoes. This seems to be primarily the result of bulk or special terms given to contract shippers, an advantage the government apparently does not obtain. Considering the unsubsidized operators, we note that 83% of the cargo carried by liner service operators, 64.5% of that carried by tramp operators, and 80.8% of that carried by tanker dry bulk operators consisted of government-generated cargo. The percentage of their respective revenues attributable to government disbursements is:

| Non-Subsidized | | |
|---|---|---|
| Liner Operators | 88% | $163 Million |
| Tramp Operators | 74% | $124 Million |
| Tanker Dry Bulk | 84% | $103 Million |

Their total earnings from government sources, therefore, add to $390 million, or 82% of their total estimated earnings of $475.5 million.

We therefore note that in 1964 the U.S. dry cargo foreign trade fleet of 639 ships, participating in the carriage of government-generated cargo, earned a total revenue of $1144 million carrying dry cargo, of which $646 million or about 58% was contributed by the government. An additional $94 million was earned by the subsidized operators for moving passengers (commercial and government), while an additional $8.4 million was spent to charter

subsidized shipping. In total, therefore, the government spent $671 million out of the total U.S. flag dry cargo ship earnings of $1246 million. This can be further broken down into cargo generated by individual government agencies as follows:

| | Liner | | | |
|---|---|---|---|---|
| | Subsidized | Unsubsidized | Tramp | Tanker |
| *PL 480 | 1582 | 1010 | 4426 | 2249 |
| *MSTS | 972 | 1022 | 1555 | 8360 |
| *AID | 945 | 1396 | 761 | 72 |
| *Others | 286 | 83 | - | - |
| *Total Long Tons | 3785 | 3511 | 6742 | 10681 |
| **PL 480 | 47 | 32 | 95 | 46 |
| **MSTS | 128 | 83 | 14 | 55 |
| **AID | 34 | 37 | 14 | 16 |
| **Others | 45 | 9 | - | - |
| **Total Revenue | 254 | 161 | 123 | 117 |

*L.T. in Thousan
**Revenue in Millions of Dollars

The various resulting values of revenue per L.T. are indications of the large diversity of freight charges.

Government-generated cargo is charged as either non-differential or differential cargo. Non-differential cargo includes all berth type conference rated cargo as well as some "open" rated bulk cargo for which, for some reason, no differential is computed. This category makes up much of the subsidized liner cargo, but only a fraction of the unsubsidized operators' cargo. Differential cargo, on the other hand, consists chiefly of open rated bulk type

commodities for which the Department of Agriculture computes a differential. The amount of differential equals the difference between the cost of moving cargo in U.S. flag vessels and the cost to the government using foreign vessels.

Of the $221 million spent for the carriage of PL 480 cargo, for instance, revenue of $153 million was computed on differential and that of $68 million on non-differential rate. The differential was over $81 million. In other words, the government could have saved $81 million out of the $221 million spent for moving 7 million long tons of PL 480 cargo in 1964 if competitive world rates were applied.

A total of 325 U.S. flag ships participated in the carrying of PL 480 cargo. The average revenue per long ton was $21.81 and the average differential included in this rate was $11.58 per long ton. In other words, the government paid a subsidy of $114,613 for the average voyage of these ships (including subsidized ships). Subsidized ships supposed to have been paid a cost differential subsidy to establish their competitiveness with foreign ships were paid an average revenue of $17.80/long ton including a differential of $7.25/long ton, which resulted in an average added subsidy, paid with PL 480 funds, of $24,678 per sailing on each of 165 voyages made by 92 subsidized liners.

By a similar analysis of other components of government-generated cargo it is estimated that $41 million could have been saved if the government had taken advantage of the usual available

commercial terms for the carriage of dry cargo. In summary, government indirect subsidy and aid to the U.S. flag dry cargo merchant marine generated over 58% of its cargo revenue and provided an estimated $122 million in direct differentials.

Since 1964 the contributions of the various programs mentioned have increased. In particular, the participation of MSTS-generated cargo has increased substantially. The total proportion of government cargo revenues is estimated at 64% of all cargo revenues for 1967. The increase is largely due to the service requirements in Vietnam.

The effect of General Agency Agreements (GAA) is not included in this discussion. Under these agreements, private operators undertake to man and operate government-owned ships for the government, for a fee. These operations, though not particularly lucrative, help to defray management and other overhead costs of various operators and permit the introduction of the benefits of scale into his operations.

## 7. EFFECTIVENESS AND COST OF DIRECT AND INDIRECT SUBSIDY PROGRAMS

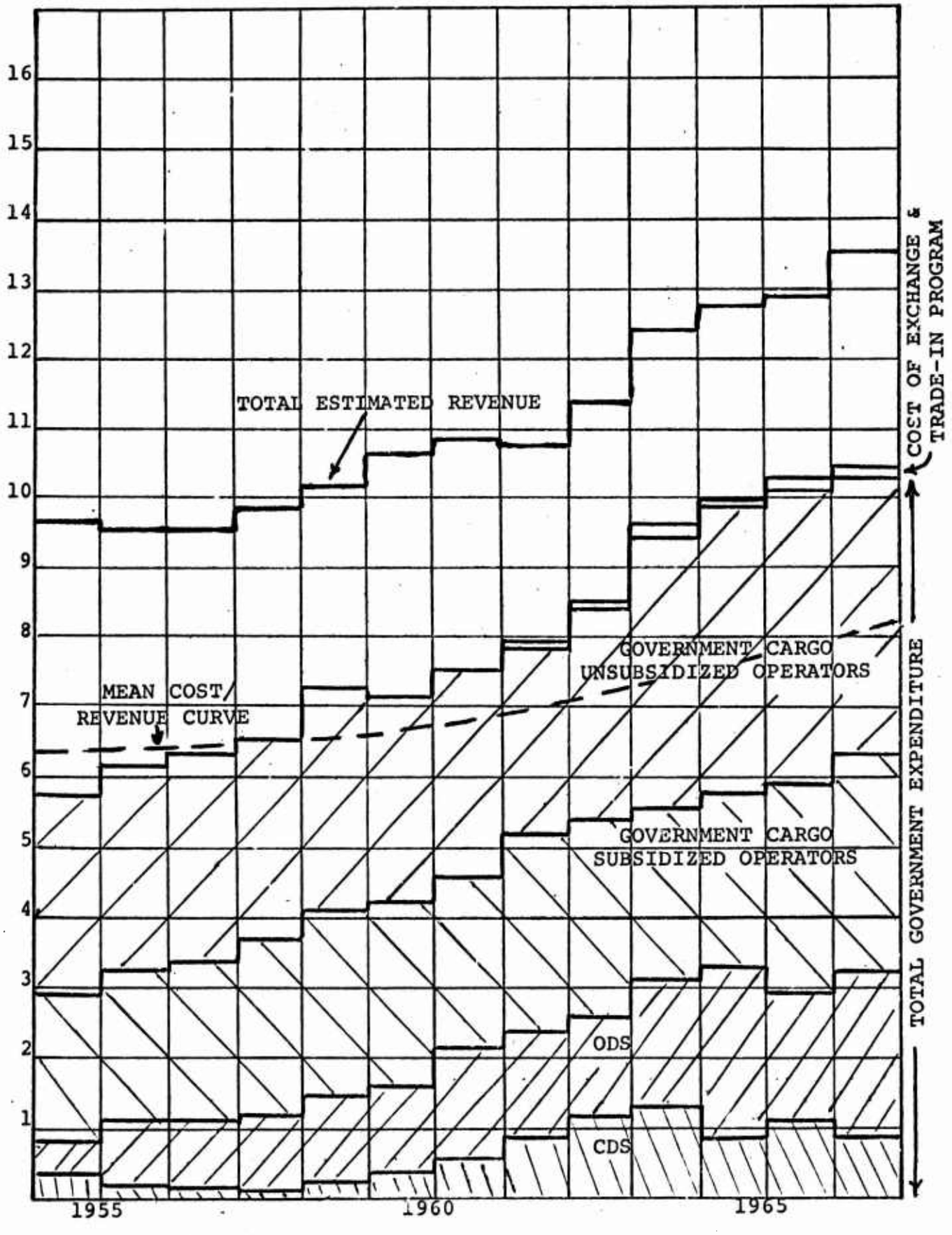
The effectiveness of federal government aid to the U.S. Merchant Marine has been questioned from the point of view of public interest as well as the emergency requirement sufficiency. It is obviously important for the government to maximize the national benefit received for all tax dollars spent in direct or indirect subsidy. We, furthermore, must attempt to increase productivity gains to retard inflationary trends and thereby also maintain a proper balance of payments. On the other hand, all of the above factors should be accomplished without extensive government involvement or protectionism, to assure maintenance of free, competitive private enterprise in the maritime industry. Similarly, even under federal economic protection, the industry should maintain proper collective bargaining positions towards various sectors of labor involved and be encumbered as little as possible by government relations or program administration. All of the above, often conflicting desires, lead to a maximum involvement of maritime industry management decision in business choices and the introduction of business incentives and risks to which all free enterprise is subject.

Although the merchant shipping and other federal laws were designed to accomplish the above aims, while maintaining or increasing the strength and competitiveness of the U.S. Merchant Marine, the actual results are quite different, and we are confronted today by an ever-diminishing merchant marine of decreasing quality and capability, managed by business enterprises unwilling to take risks due to the lack of incentives. True collective bargaining does not take place in this

industry as a result of the fact that the government pays up to 71¢ per each wage dollar, which greatly affects the attitude of both labor and management, with the government as a silent nonparticipating partner at the bargaining table which shoulders the bulk of any change in the cost of labor and working conditions. It may be noted, for instance, how unsubsidized operators with equivalent ships manage to obtain greatly improved conditions from our labor unions as a result of their freedom of choice in selecting ship registries, as well as bargaining partners.

It is difficult to measure the effectiveness of our merchant marine. Various measures of performance are discussed in Section 8, primarily from the point of view of transportation utility obtained per unit of government involvement. Effectiveness, on the other hand, involves more than economic performance to fully justify the intent of the various laws relating to federal aid to the merchant marine. In addition to the capability of meeting emergency requirements, the merchant marine is supposed to support the public interest and, therefore, various qualitative measures of effectiveness, or measures which constitute effectiveness, must also be considered. These include among others:

1) The capability of the U.S. Merchant Marine to respond to emergency mobilization requirements.
2) The capability of responding to peacetime military and other government transportation requirements in a cost-effective manner.
3) The capability of handling a substantial portion of U.S. foreign trade and thereby affecting the U.S. balance of payment by transportation revenues.




Total Government Expenditures

Fig. 7.1

4) The effect of U.S. shipping capability on import and export freight rates. This particularly refers to differential rates for import and export cargo.

5) The capability of maintaining quality of shipping and employment opportunities for a reasonable and sufficient number of U.S. citizens.

6) To provide a market for U.S. shipbuilding, their ship component manufacturing industries to maintain sufficient base.

7) To provide ocean transportation of a form properly integrated with feeder-line domestic services benefitting U.S. Commerce and industry.

The above considerations provide additional qualitative measures of effectiveness which are hard to determine, yet play a major role in satisfying defense and public interest needs of the nation. Figure 7.1 shows effectiveness of various government expenditures for the U.S. Merchant Marine are in terms of direct and indirect subsidies of the U.S. Government. It also indicates levels of effectiveness in earned total revenue over the years.

The total cost of the programs and government freight or charter charges to the taxpayer exceed $1 billion which constitutes about 80% of the total revenue of the shipping industry. It can be seen that cost-effectiveness of our merchant marine has a continuous upward trend or an increasing cost per unit effectiveness defined here as revenue. It is for this reason that various proposals have been suggested, all designed to improve the cost effectiveness of government programs in support of the U.S. Merchant Marine. Some of these are discussed in the next Section, including measures of performance designed to more appropriately distribute

various government aid. The main attempt in many of these approaches is to insure the introduction of incentive and free managerial growth for the same or lesser government involvement.

It may be argued that not all of the funding spent by the Federal Government is designed to support the Merchant Marine. For instance, CDS may be assumed to primarily assist U.S. Shipbuilders. Similarly the expense for movement of government cargoes by U.S. ships may be said not to represent indirect subsidy or aid as the government presumably must move this cargo. No figures are available on the cost to the government of moving these cargoes in a free market under strictly competitive conditions, but some expert maintains that a 30-40% saving of the measly $700 million or $210 to $280 million could be saved. Under conditions of non-availability of government cargoes, it seems highly doubtful, that the subsidized operators would be able to make the loss in freight by other cargo. The unsubsidized operator, obviously depends on government cargo for over 80% of his revenues and could not subsist in its absence.

Summarizing the government involvement in Indirect Subsidy and Cargo Programs for the year 1965:

| | | | |
|---|---|---|---|
| Cost 1961 - 1965 | = $94.7M | Annual | $ 18.4M |
| Subsidized Liner | | | $254.0M |
| Unsubsidized Liner | | | $161.0M |
| Tramp Ship | | | $123.0M |
| Tanker | | | $117.0M |
| Charter | | | $ 8.4M |
| | | | $681.8M |

At the prevailing world freight rates (or conference rates where applicable) the government would have bought their transportation part of $663.4M for about $417.0M.

## 8. INCENTIVE GROWTH AND MEASURES OF PERFORMANCE

Assuming subsidy payments are made on the basis of performance, equitable yet flexible measures of productivity or performance must be devised, which introduce desired incentive, resulting growth, and more effective transportation. The selection of particular measures of performance should assure flexibility of operation and freedom of management, economic growth, freedom to serve trade wherever cargo is available under formal business risks, equitable treatment to all recipients, ease of administration, protection of federal investments, optimum cost effectiveness to the government and the highest probability of acceptance by private industry and the public. The particular decision criteria adopted should also tend to maintain a good service and production mix, as well as the most effective vessel design and simplicity of administration by the government. It should not result in special benefits to certain limited sectors of the industry and resulting distortion of ocean transportation service. Various measures of performance have, at one time or another, been proposed. Many of these are pure economic factors or measures of transport momentum, while others are nondimensional ratios easily applied to all kinds of services and ship types as well as integrated transportation systems. Criteria defined by transportation momentum measures include, among others:

1) Cost per ton mile. (Weight or Measurement Ton)

2) Weight or measurement tons of cargo carried per unit time.

3) Revenue tons of cargo carried per unit time.

4) Revenue tons per mile produced.

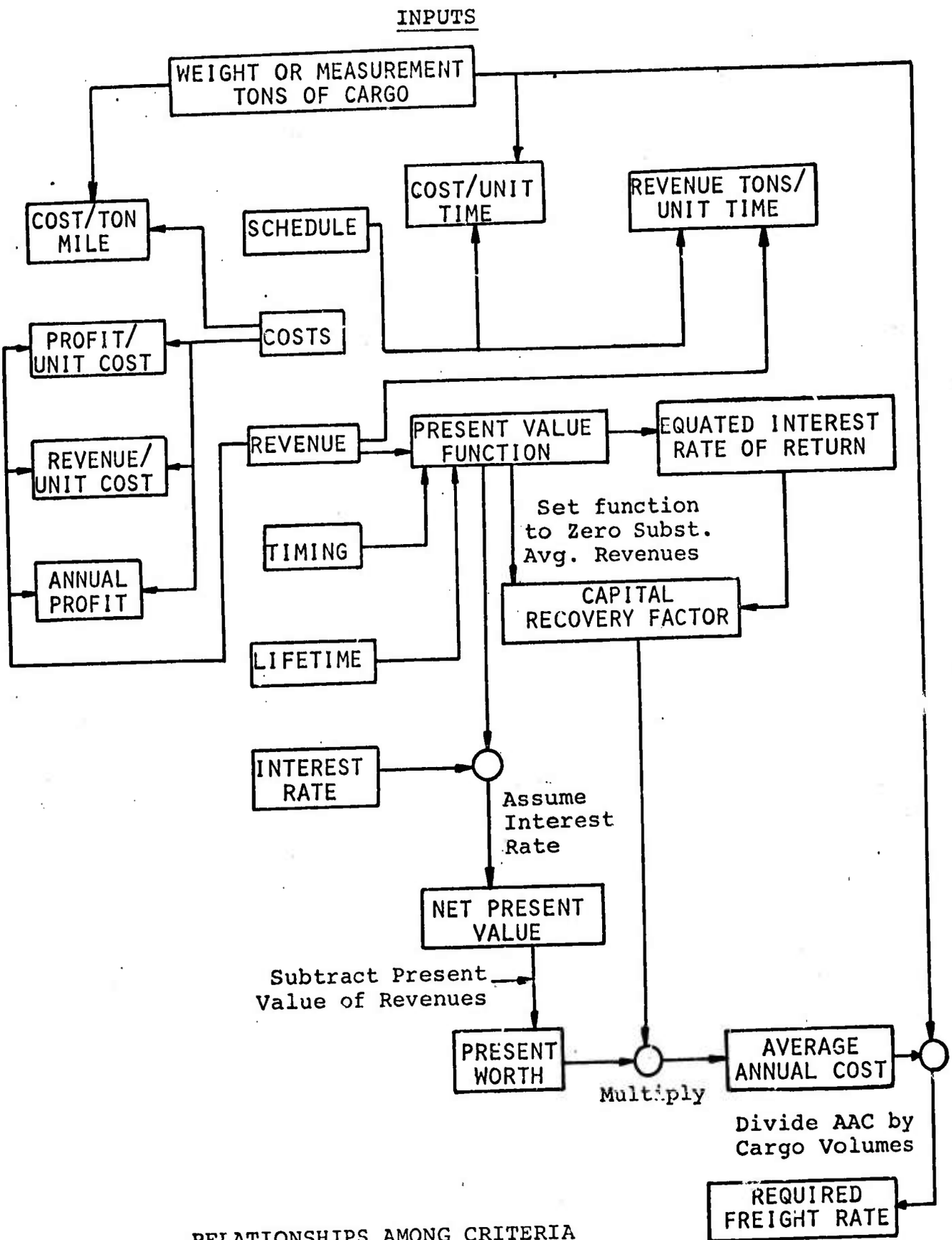
Similarly, various economic criteria can be applied, such as:

1) Annual Profit.
2) Payback Period.
3) Capital Recovery Factor.
4) Revenue Per Unit Cost.
5) Profit Per Unit Cost.
6) Required Freight Rate.
7) Minimum Average Annual Cost.
8) Net Present Value.
9) Present Worth.
10) Equated Interest Rate of Return.
11) Discounted Cash Flow.

While many of the transport momentum or economic criteria listed above are proper measures of performance for the ship owner or ship operator, they are less effective in measuring the efficiency of government direct and indirect subsidy investment in aiding the U.S. Merchant Marine. Productivity measures designed to judge the effectiveness of use of government funding generally consists of nondimensional ratios in which total revenue or other economic benefit is divided by total government involvement. These measures of effectiveness include, among others:

1) Discounted life-cycle revenue, divided by discounted life-cycle subsidy.
2) Estimated total expected discounted life-cycle revenue and other economic benefits, divided by total discounted estimated subsidy and tax or indirect financial government involvements.

The basic productivity measures are presented in Table 8.1 and the relationship among the various criteria is presented in Figure 8.1.




RELATIONSHIPS AMONG CRITERIA
Fig. 8.1

Table 8.1

SHIPPING PRODUCTIVITY MEASURES

| | |
|---|---|
| **Transportation Momentum Criteria** | 1. Cost/Ton Miles |
| | 2. Ton/Unit Time |
| | 3. Revenue Tons/Unit Time |
| **Interest-Based Economic Criteria** | 1. Capital Recovery Factor |
| | 2. Required Freight Rate |
| | 3. Net Percent Value |
| | 4. Present Worth |
| | 5. Equated Interest Rate of Return |
| | 6. Discounted Cash Flow |
| | 7. Average Annual Cost |
| | 8. Payback Period |
| **General Economic Criteria** | 1. Annual Profit |
| | 2. Revenue/Unit Cost |
| | 3. Profit/Unit Cost |
| **Government Criteria** | 1. Discounted Life Cycle Revenues/ Discounted Life Cycle Subsidy |
| | 2. Expected Discounted Life Cycle Revenue/Total Expected Life Cycle Government Involvement |

After many trials and errors and after many years of allocating government construction differential subsidy on a first come first served basis, productivity measures were introduced and are used as a guideline for the allocation of such subsidy now. Over the years the government ship replacement program, under Title VI of the Merchant Marine Act of 1936, lagged greatly and now is a cumulative total of over 100 ships behind the intent of the law by which every subsidized overage ship was to be replaced. With this long backlog, the governments old procedure often supported the construction of ships serving routes not necessarily important but often acted on information and request which, by the time they were granted, were a few years old and not necessarily valid any more. Payment of any subsidy or aid designed to be effective in maintaining initiative, free enterprise, and growth, must be based, at least in part, on productivity or work performed as contrasted to cost differentials under the present system. The recipient is then motivated to greater production at reduced costs in his self interest of higher profits and increased returns on his capital investments.

Performance is an obvious measure of capability to produce, which is the real measure of public interest. Our whole economic philosophy is based on the premise that private enterprise is motivated by a potential for increased earnings. Earnings again depend on productivity or the combination of production and costs. Productivity again can be related to profit or a measure of return on capital necessarily employed and invested. In the past, the public benefit was expressed in terms of relative production performed such as per cent of total weight or measurement tons of cargo carried by U.S. flag in foreign commerce. These measures do not really represent proper criteria of achievement as there is little relationship between values of tons of one commodity or another. In addition their measures certainly do not permit a comparison of transportation capability. The potential transportation

capacity is an obvious measure of public interest but applies more to a reserve fleet, as it does not necessarily attain a proper balance in terms of emergency requirements, employment, balance of payment, and economic effect on U.S. trade freight rates.

Payment of subsidy should be a factor of the revenue dollars generated by the operation. This method is based on the premise that the freight tariff is structured to take into account all of the many vicissitudes of the particular trade for which it is written, including cargo mix, distance, voyage and vessel costs, direction of flow biases, and so on. It responds to the pressures of supply and demand and ultimately reflects them even though it may lead or lag them. As a common denominator it dismisses many of the inequities contained in other performance standards because it is based upon a rate structure which already reflects traffic differences.

Such a system, if a single rate of payment can be used, permits maximum business flexibility. It also provides for private choice as to allocation of resources, area of operation, type of equipment and service, frequency and scope of sailings, and kinds of cargo sought.

If we assume freight rates reflect average costs, modified of course by supply and demand, then the revenue dollar will contain a built-in factor for escalation due to rising prices. On this assumption, thesubsidy factor can be a constant.

Payment on this basis gives full consideration to business chance. It provides an incentive for a recipient to produce, and/or to lower unit costs because he is paid only for performance. He is not guaranteed a specific amount if there is a temporary period of short cargo availability. He must either reduce his operating capability (lay-up ships) or fight harder for full utilization if he is to make ends

meet. This is a normal risk of private enterprise where booms and recessions must be coped with as they come.

It is relatively simple in administration, is subject to rapid audit for both control and calculation purposes, and permits a good degree of accuracy with equal treatment for all. Although any system probably cannot be perfect, and this particular alternative has been selected as being the best of the various possible courses of acting, even so, it will probably be necessary to introduce certain restrictions to assure that undue gains by operators are avoided.

Decisions on CDS and ODS are not really separate. Any ship receiving CDS obviously becomes eligible for ODS. If we allocate CDS funds on the basis of potential productivity, then it is obviously in the public interest to allocate ODS as a function of productivity to assure maintainance of incentive provided by the ship itself. Similarly such counter incentive features as excess profit recapture would have to be repelled.

## 9. POTENTIAL CHANGES AND RECOMMENDATIONS

The intent of the various subsidy laws enacted is apparently not met by the procedures, methods and criteria adopted in the past. To assure effective growth and the maintainance of a merchant marine capable of handling emergency requirements, as well as various factors of public interest mentioned before, an attempt must be made which assures attainment of these goals with a minimum outlay of taxpayers' money. An improved method may propose:

1) Selection of ships for construction with CDS under a expected productivity criteria to which all applicants' ships (or fleets) are subjected. Available CDS funds are then distributed by order of productivity index.

$$P = \frac{\text{Expected Discounted Life Cycle Revenue}}{\text{Expected Discounted Life Cycle Government Subsidy Requirements}}$$

2) Operating differential subsidy is paid at the owner's option (contract for remaining life of ship) either on old ODS basis or as a bonus which is a function of the revenue earned. In either case the recapture clause is renounced. Some intermediate structure of combined differential cost and revenue bonus subsidy could also be arranged.

It may be argued that ultimately operating subsidies should be paid on the basis of profit, to introduce additional incentives for cost reductions, but this seems hard to implement.

After studying the impact of government aid on the merchant marine in the past, it must be said that the program was largely ineffective and basically

satisfied nobody. It is surprising how tenaciously all parties attempt to maintain the status quo, which has made the industry largely ineffective in its capability of responding to emergency needs and other factors of public interest.

## APPENDIX A

## HIGHLIGHTS OF OPERATING SUBSIDY LAWS

Any citizen of the United States may apply for an operating-differential subsidy for a vessel used in an essential service in the foreign commerce of the United States, but, in practice, only liner operators are eligible. Tanker, tramp and industrial carrier operators do not qualify; they do not meet one or more of the following standards which are enumerated in Sections 601 and 605 of the Act:

1. The service must be determined to be essential and regular.
2. The operation must be required to meet foreign-flag competition and to promote the foreign commerce of the United States.
3. The applicant must own or be willing and able to obtain vessels of the size, type, speed, and number and with proper equipment to meet competitive conditions and to promote foreign commerce.
4. The operator must possess the ability, financial resources, and other qualifications necessary to enable him to carry on a successful operation.
5. Finally, no subsidy may be granted if it would give undue competitive advantage or be unduly prejudicial to citizens of the United States.

A number of other requirements are placed upon the subsidized companies. Among the most important are:

1. Subsidized vessels must be manned by U.S. citizens; except that 10 per cent of the steward's department may be aliens if they intend to become U.S. citizens.
2. Only vessels built in the United States are subsidized, and these vessels have a statutory life of only twenty-five years.
3. One-half of the profits in excess of 10 per cent of capital necessarily employed are recaptured by the Maritime Administration up to the amount of the subsidy paid the operator. Conversely, under some conditions, profits earlier recaptured can be re-recaptured.
4. Other financial conditions are imposed upon the subsidized operators. These include dividend restriction to 10 per cent of capital necessarily employed and segregation of certain funds to be used primarily for new construction. Through voluntary deposits into the segregated funds, subsidized operators can reduce their tax liability.
5. The general operation and character of the business are also closely regulated. Thus:
   a. Subsidized lines cannot operate any chartered vessels under subsidy "save and except during a period of actual emergency determined by the Commission...."
   b. Subsidized firms are not allowed to engage in the sale of any services to the subsidized portion of the operation ancillary to the operation of subsidized vessels. This includes such activities as (1) towboat services, (2) stevedoring, and (3) ship repairing.

c. Subsidized lines cannot operate unsubsidized vessels in competition with other subsidized lines.
d. Subsidized lines cannot engage in the intercoastal or coastal trades of the United States.
e. Subsidized lines are restricted from engaging directly or indirectly in any enterprise not connected with shipping.
f. Subsidized lines cannot operate any foreign-flag vessels competing with a U.S.-flag vessel on a line deemed to be essential.
g. The contractor must operate his vessel in the most economical and efficient manner, with due regard to wage, manning scales, and working conditions prescribed by the Maritime Administration.

These restrictions suggest that subsidized companies forego many potential advantages in exchange for the subsidy, but waivers may be granted and often are. To a considerable degree, the operators become instruments of governmental policy, entering into contracts with the Maritime Administration. No contract can exceed twenty years in duration.

## APPENDIX B

## HIGHLIGHTS OF CONSTRUCTION DIFFERENTIAL SUBSIDY LAWS

Under Section 501(a) of the Merchant Shipping Act of 1936 and the terms of the Long-Range Shipping Act of 1952, all operators in the foreign trades are eligible for construction-differential subsidy. In applying for such subsidy, an operator is obliged to submit detailed specifications for the vessel or vessels proposed for review by the Maritime Administration and the Navy, who determine commercial and military suitability. Military features, such as 10% reserve horsepower and others, must be incorporated into any proposed design. Although the Maritime Administration pays all the direct costs of such features, most operators have subsequently effectively used this reserve power and some other features to enhance their operations.

If the Secretary of the Navy certifies his approval under Section 501(b) of the Merchant Shipping Act, and the Commission approves the application, it may secure, on behalf of the applicant, bids for the construction of the proposed vessel according to the approved plans and specifications. If the bid of the shipbuilder who is the lowest responsible bidder is determined by the Commission to be fair and reasonable, the Commission may approve such bid, and if such approved bid is accepted by the applicant, the Commission is authorized to enter into a contract with the successful bidder for the construction, outfitting, and equipment of the proposed vessel, and for the payment by the Commission to the shipbuilder, on terms to be agreed upon in

the contract, of the contract price of the vessel, out of the construction fund hereinbefore referred to, or out of other available funds. Concurrently with entering into such contract with the shipbuilder, the Commission is authorized to enter into a contract with the applicant for the purchase by him of such vessel upon its completion, at a price corresponding to the estimated cost, as determined by the Commission pursuant to the provisions of this Act, of building such vessel in a foreign shipyard.

The amount of the reduction in selling price which is herein termed "construction differential subsidy" may equal, but not exceed, the excess of the bid of the shipbuilder constructing the proposed vessel (excluding the cost of any features incorporated in the vessel for national defense uses, which shall be paid by the Secretary in addition to the subsidy), over the fair and reasonable estimate of cost, as determined by the Secretary, of the construction of the proposed vessel if it were constructed under similar plans and specifications (excluding national defense features as above provided) in a foreign shipbuilding center which is deemed by the Secretary to furnish a fair and representative example for the determination of the estimated foreign cost of construction of vessels of the type proposed to be constructed. The construction differential approved and paid by the Secretary shall not exceed 55% of the construction cost of the vessel, except that in the case of reconstruction or reconditioning of a passenger vessel having the tonnage, speed, passenger accommodations and other characteristics set forth in Section 503 of this Act, the construction differential approved and paid shall not exceed 60% of the reconstruction or reconditioning cost (excluding

the cost of national defense features as above provided): Provided, however, That after June 30, 1966, the construction differential approved by the Secretary shall not exceed in the case of the construction, reconstruction or reconditioning of any vessel, 50% of such cost. When the Secretary finds that the construction differential in any case exceeds the foregoing applicable percentage of such cost, the Secretary may negotiate and contract on behalf of the applicant to construct, reconstruct, or recondition such vessel in a domestic shipyard at a cost which will reduce the construction differential to such applicable percentages or less. In the event that the Secretary has reason to believe that the bidding in any instance is collusive, he shall report all of the evidence on which he acted (1) to the Attorney General of the United States, and (2) to the President of the Senate and to the Speaker of the House of Representatives if the Congress shall be in session or if the Congress shall not be in session, then to the Secretary of the Senate and Clerk of the House, respectively.

In such contract between the applicant and the Commission, the applicant shall be required to make cash payments to the Commission of not less than 25% of the price at which the vessel is sold to the applicant. The cash payments shall be made at the time and in the same proportion as provided for the payments on account of the construction cost in the contract, between the shipbuilder and the Commission. The applicant shall pay, not less frequently than annually, interest at the rate of 3½% per annum on those portions of the Commission's payments as made to the shipbuilder which are chargeable to the applicant's purchase price of the vessel (after deduction of the

applicant's cash payments). The balance of such purchase price shall be paid by the applicant, within twenty-five years after delivery of the vessel and in not to exceed twenty-five equal annual installments, the first of which shall be payable one year after the delivery of the vessel by the Commission to the applicant. Interest at the rate of 3½% per annum shall be paid on all such installments of the purchase price remaining unpaid.

If no bids are received for the construction, outfitting, or equipping of such vessel, or if it appears to the Commission that the bids received from privately owned shipyards of the United States are collusive, excessive, or unreasonable, and if the applicant agrees to purchase said vessel as provided in this section, then, to provide employment for citizens of the United States, the Commission may have such vessel constructed, outfitted, or equipped at not in excess of the actual cost thereof in a navy yard of the United States under such regulations as may be promulgated by the Secretary of the Navy and the Commission. In such event the Commission is authorized to pay for any such vessel so constructed from its construction fund. The Commission is authorized to sell any vessel so constructed, outfitted, or equipped in a navy yard to an applicant for the fair and reasonable value thereof, but at not less than the cost thereof less the equivalent to the construction-differential subsidy determined as provided by subsection (b), such sale to be in accordance with all of the provisions of this title.

The Secretary of Commerce, with the advice of and in coordination with the Secretary of the Navy, shall, at least once each year, as required for purposes of this Act, survey the existing privately owned shipyards capable

of merchant ship construction, or review available data on such shipyards if deemed adequate, to determine whether their capabilities for merchant ship construction, including facilities and skilled personnel, provide an adequate mobilization base at strategic points for purposes of national defense and national emergency. The Secretary of Commerce, in connection with ship construction, reconstruction, reconditioning, or remodeling under title VII and Section 509 and the Federal Maritime Board, in connection with ship construction, reconstruction, or reconditioning under title V (except Section 509), upon a basis of a funding that the award of the proposed construction, reconstruction, reconditioning, or remodeling work will remedy an existing or impending inadequacy in such mobilization base as to the capabilities and capacities of a shipyard or shipyards at a strategic point, and after taking into consideration the benefits accruing from standardized construction, the conditions of unemployment, and the needs and reasonable requirements of all shipyards may allocate such construction, reconstruction, reconditioning, or remodeling to such yard or yards in such manner as it may be determined to be fair, just, and reasonable to all sections of the country, subject to the provisions of this subsection. In the allocation of construction work to such yards as herein provided, the Commission may, after first obtaining competitive bids for such work in compliance with the provisions of this Act, negotiate with the bidders and with other shipbuilders concerning the terms and conditions of any contract for such work, and is authorized to enter into such contract at a price deemed by the Commission to be fair and reasonable. Any contract entered into by the Commission under the provisions of this subsection shall be subject to all of the terms and conditions of this Act,

excepting those pertaining to the awarding of contracts to the lowest bidder which are inconsistent with the provisions of this subsection. In the event that a contract is made providing for a price in excess of the lowest responsible bid which otherwise would be accepted, such excess shall be paid by the Commission as a part of the cost of national defense, and shall not be considered as a part of the construction-differential subsidy. In the event that a contract is made providing for a price lower than the lowest responsible bid which otherwise would be accepted, the construction-differential subsidy shall be computed on the contract price in lieu of such bid.

If, as a result of allocation under this subsection, the applicant incurs expenses for inspection and supervision of the vessel during construction and for the delivery voyage of the vessel in excess of the estimated expenses for the same services that he would have incurred if the vessel had been constructed by the lowest responsible bidder the Secretary of Commerce (with respect to construction under title V, except Section 509) shall reimburse the applicant for such excess, less one-half of any gross income the applicant receives that is allocable to the delivery voyage minus one-half of the extra expenses incurred to produce such gross income, and such reimbursement shall not be considered part of the construction-differential subsidy: Provided, that no interest shall be paid on any refund authorized under this Act. If the vessel is constructed under Section 509 the Secretary of Commerce shall reduce the price of the vessel by such excess, less one-half of any gross income (minus one-half of the extra expenses incurred to produce such gross income) the applicant receives that is allocable to the delivery voyage. In the case of a vessel that is not to receive operating-differential

subsidy, the delivery voyage shall be deemed terminated at the port where the vessel begins loading. In the case of a vessel that is to receive operating-differential subsidy, the delivery voyage shall be deemed terminated when the vessel begins loading at a United States port on any essential service of the operator. In either case, however, the vessel owner shall not be compensated for excess vessel delivery costs in an amount greater than the expenses that would have been incurred in delivering the vessel from the shipyard at which it was built to the shipyard of the lowest responsible bidder. If as a result of such allocation, the expenses the applicant incurs with respect to such services are less than the expenses he would have incurred for such services if the vessel had been constructed by the lowest responsible bidder, the applicant shall pay to the Secretary of Commerce an amount equal to such reduction and, if the vessel was built with the aid of construction-differential subsidy, such payment shall not be considered a reduction of the construction-differential subsidy.

Vessel acquired by commission-sale to applicant. Eligible for operating-differential subsidy.

## APPENDIX C

### SUMMARY OF ASSUMPTIONS OF SHIPS UNDER "EFFECTIVE U.S. CONTROL"

Foreign ships assumed to be under "Effective U.S. Control" fall into two categories:

1) Foreign flag ships subject to U.S. Maritime Administration contractual control

2) Ships under PANLIBHON registry with U.S. stock control of the foreign corporate owner.

Ships of NATO allies can only be assumed under U.S. control under specific treaty conditions which require the setting up of a shipping pool.

The total number of foreign ships subject to contractual control is 357 of which 171 are owned by corporations with U.S. stock control while 186 are owned by corporations with foreign majorities. Apart from the 232 ships under contractual control registered under PANLIBHON flags, another 209 ships under these registries are owned by U.S. controlled corporations. We, therefore, consider a fleet of 566 ships to be under "Effective U.S. Control".

A closer look at the 357 ships under contractual control indicates that 18 of these vessels are conversions to non-self-propelled barges, tanker forebodies and the like, while another 12 vessels are special types such as yachts, whaling ships, cement carriers, etc. In addition, the sale of four tankers for scrapping has been approved. The remaining 323 ships under contractual control consist of 2 passenger liners, 9 cargo/passenger vessels, 131 tankers, and 192 cargo vessels.

Other U.S. citizen-owned ships under PANLIBHON flags which were never under U.S. registry and are deemed under effective control through informal means consist mainly of foreign built vessels owned by major U.S. oil companies. These 209 vessels consist of 115 foreign built super-tankers and 94 dry bulk carriers.

While all the ships under contractual control were originally vessels constructed and registered in the U.S. and transferred subject to certain restrictive conditions prescribed pursuant to provisions of Sections 9, 37 and 41 of the Shipping Act of 1916, as amended, some changes occurred whereby foreign built vessels were substituted for the vessels under the original contract. According to contract terms and policy as defined under Title 46, Chapter II, Appendix A, condition 2 - "The vessel, whether owned by the foreign contractor or any subsequent transferee, shall, if requested by the United States or any qualified department or agency thereof, be sold or chartered to United States on the same terms and conditions upon which a ship owned by a citizen of the United States could be requisitioned for purchase or charter as provided for in Section 902 of the Merchant Marine Act, 1936, as amended (46 U.S.C. 1242). If the transfer of the vessel is to the flag of a country that is a member of the North Atlantic Treaty Organization (NATO), the Administrator will consider this condition satisfied if the vessel upon request is made available to a NATO country."

Additional conditions for vessel transfer stipulate penlties imposed in theevent of default under conditions of availability, as described above, and restrictive conditions of transfer of ownership and trade, as described in conditions 1 and 3.

An important consideration in the contract is that availability conditions will be considered satisfied by a contractor whose vessel is registered under the flag of a member of NATO if the vessel upon request is made available to the NATO country. NATO treaty conditions are such that a shipping pool must be organized before member nations or NATO command can call upon shipping. The above terms seem to be the major reasons for considering only PANLIBHON ships to be under effective U.S. control for the use of MSTS.

Non-contractual control of PANLIBHON ships stems from letters of commitment by U.S. owners whereby the Maritime A ministration extends war risk insurance subject to ship availability in time of war and the application of requisitioning authority.

Under the assumption that only PANLIBHON ships are under effective control, we obtain the following availability:

| | |
|---|---|
| Barges and special types | 11 |
| Large-fast tankers | 115 |
| Dry bulk carriers | 94 |
| T-2 and other U.S. built tankers | 144 |
| Passenger/cargo ships | 5 |
| Liberty ships | 60 |
| Other dry cargo vessels | 12 |
| Total | 441 |

or a total of 430 applicable ships.

From a military support point of view the major use of this fleet lies in the large number of T-2 and other small tankers. Most of the cargo vessels excluding Liberties are also of World War II construction. The bulk carriers and supertankers may be required to support essential civilian requirements in time of emergency.

Although shipping shortages requiring activation of NDRF ships occurred since World War II, third party ships have never been recalled to make up deficiencies. It appears that the government would be extremely reluctant in claiming these vessels in any conflict short of global war. Because of increasing nuclear stand-off, limited war may have to be supported without declaration of a national emergency. Although the emergency declared during the Korean conflict has not been rescinded, it is doubtful that Section 902 of the Merchant Marine Act of 1936 would be imposed in a limited war condition. Under condition of national emergency when this Section is imposed, the government assumes:

1) Authority to requisition an unlimited number of ships immediately upon outbreak of the emergency

2) Commitment of unlimited funds as required to activate NDRF

3) Suspension of MSTS day to day schedules as directed

4) Assurance that sufficient manpower is made available to man activated NDRF ships as fast as they are reactivated.

All the above conditions cannot be assumed under limited war emergencies which are not declared national emergencies.

In a national emergency all foreign flag vessels are subject to the provisions of the "Emergency Foreign Vessels Acquisition Act" (Public Law 83-569). Under this law, during any period in which a vessel may be requisitioned under 902 of the Merchant Marine Act of 1936, the President is empowered to purchase or requisition or take over title to or possession of any merchant vessel not owned by citizens of the U.S. and which the President finds necessary to the national defense. This power would normally be exercised only in a state of national emergency.

## APPENDIX D

## HIGHLIGHTS OF THE LAWS CONCERNING GOVERNMENT CHARTER OF VESSELS

1.1 The Government is allowed, by law, to charter vessels within its possession to private citizens and to construct vessels on its account. Title VII of 1936 Act contains the chartering provisions and Title VII, Sec. 702 and Title V Secs. 502, 504 of 1936 Act contain provisions for the construction of vessels on the account of the Government.

### Chartering

Under Title VII, Sec. 704 gives the administration theright to charter any vessel acquired or in its possession pursuant to the following provisions:

- The administration awards the charter to the highest bidder for a monthly rate (The administration may reject the bid on the basis of it being too low, or that the credit, or experience of the operator to successfully conduct business implies a bad risk).

- The Government may recapture one-half of the cumulative net voyage profits in excess of "10 per centum per annum on the charterer's capital necessarily employed in the business of such chartered vessels --after the payment of the charter hire reserved in the charter and payment of the charterer's fair and reasonable overhead expenses applicable to operation of the chartered vessels"

- Every charterer ofthe Administration's vessels provides the agency with securities for the faithful performance of all the conditions of the charter.

- The Administration may charter a vessel on such terms as experience has demonstrated to be adequate and in the best interest of the United States and merchant marine.

- The charterer is required to carry, at his own expense, sufficient insurance coverage, in a way determined by the Administration, to meet with all damages and losses sustained by the vessel during its charter.

- "The charterer shall at its own expense keep the chartered vessel in good state of repair and in efficient operating condition and shall at its own expense make any and all repairs as may be required by the " Administration.

- The Administration "has the right to inspect the vessel at any and all times to ascertain its condition."

- Whenever the President proclaims a national emergency, the charter is terminated without notice without cost to the U.S. Government.

## APPENDIX E

## HIGHLIGHTS OF THE SHIP EXCHANGE PROGRAM LAW

(1936 Act, Sec. 510 a-d)

I. Intent of the law:

"In order to improve the type suitability of vessels operating in the domestic and foreign commerce of the United States."

II. War built vessels only to be exchanged. (Amended October 1965 to include all vessels.)

III. "The trade-in vessels shall have been owned and operated without subsidy under title VI (of 1936 Act) by citizens of U.S. and documented under the laws of U.S. for least three years prior to the date of exchange."

IV. The fair and reasonable value of the traded-in and traded-out vessels are determined, as of the date of the exchange with the following considerations taken into account:

a) The scrap value of the obsolete vessel in both the American and in the foreign markets.

b) The depreciated value based on a twenty-five year life

c) The market value thereof for operation in world trade or in the foreign or domestic trade of the U.S.

V. In determining the fair and reasonable value the cost of placing the vessels in class with respect to hull and machinery, and, with respect to any traded-out vessels of the military type, the cost of reconverting and restoring such vessels for normal operation in commercial service is taken into consideration in conjunction with the value of the vessel.

VI. The value of the traded-out vessel which is in excess of the traded-in vessel or vessels shall be paid in cash at the time of the exchange. No payments shall be made by the U.S. to an owner of a traded-in vessel in connection with any exchange under this subsection.

VII. U.S. can reacquire a ship at any time within twenty years of the date of construction. Value under reacquisition is fair and reasonable as already computed, taking into consideration depreciation during the period of service.

VIII. The vessel remains documented under U.S. laws for a period of at least five years after thedate of exchange or twenty years from the date of construction, whichever is the later date.

IX. The owner of the traded-in vessel, at his own expense and in a manner satisfactory to the Secretary of Commerce, shall

A. effect deactivation and preparation of the traded-in vessel and its equipment for storage or layup;

B. make delivery of such vessel and its equipment at a location designated by the Secretary of Commerce; and

C. execute a bond, with one or more approved sureties, conditioned upon indemnifying theUnited States from all loss resulting from any lien against such vessel existing at the time of the exchange.

X. No tanker vessel shall be traded out under the provisions of this subsection. (This was amended October 1965 to provide that tankers could be traded out under special or exempt conditions.)

## APPENDIX F

## HIGHLIGHTS FROM THE TRADE-IN LAW 1936

### Act Section 510(i)

I. Obsolete vessel defined

A. Not less than 1,350 gross tons.

B. Not less than 17 years old, and obsolete in Commission's judgement.

C. Owned for 3 years or more by U.S. citizen.

II. New vessel defined

A. Construction within this Act's provisions and acquired within 2 years from the date of its completion or its purchased under section 714, as amended, by the person turning in an obsolete vessel under this section.

B. Or is hereafter constructed in a domestic shipyard or private account and not under provisions of this Act, and documented under the laws of the United States.

III. Purpose of the Act

The commission is authorized, under provisions of this Act, to acquire any obsolete vessel in exchange for an allowance of credit, which shall be determined at the time the owner contracts for the construction or purchase of a new vessel. This allowance is applied to the purchase price of the new vessel rather than paid to the owner of the obsolete vessel. In the case of a new vessel constructed under the provisions of this Act, the allowance may be applied upon the cash payments required under this Act subject to such terms and conditions as the Commission may prescribe. If the new vessel is not constructed under the provisions of this Act, the allowance shall be paid, for the owner's account, to the shipbuilder constructing such new vessel when the obsolete vessel has been transferred to the Commission.

IV. Utility value of new vessel.

The utility value of the new vessel for United States foreign or domestic operation shall not be substantially less than that of the obsolete vessel. If the commission finds that the new vessel will provide utility value equivalent to or greater than that of theobsolete vessel even though of lesser tonnage, than the gross tonnage of the obsolete vesse may not exceed the gross tonnage of the new vessel in a ratio not more than three to one.

V. Use of obsolete vessels and of laid-up fleet restricted.

An obsolete vessel acquired by the Commission which is or becomes twenty-five years old or more and vessels which are in the Commission's laid-up fleet which are or become twenty-five years old or more, shall not be used for commercial operation except:

1) when requisitioned under section 902* of this Act as amended, and

2) as otherwise provided in this Act for the employment of the Commission's vessels in steamship lines on trade routes exclusively serving the foreign trade of the United States.

*Sec. 902: Whenever the President shall proclaim that the security of the national defense makes it advisable or during any national emergency declared by proclamation of thePresident, it shall be lawful for the commission to requisition or purchase any vessel or other watercraft owned by citizens of the United States or under construction within the United States, or for any period such emergency, to requisition or charter such property. The termination of an emergency so declared shall be announced by a further proclamation by the President.

## Appendix G

## ANALYSIS OF TYPICAL (C-4) SUBSIDIZED OPERATION

Assuming a C-4 ship costs $13 million CDS becomes $7 million. Working capital of operator per ship is normally assumed at $100,000. (Marad regulations permit 1/2 expenses of an average voyage to be included in capital necessarily employed when computing excess profits subject to recapture.) We then obtain the following results on an annual basis:

| | Private | Government |
|---|---|---|
| Investment | 6,000,000 | 7,000,000 |
| Working Capital | 100,000 | --- |
| | 6,100,000 | 7,000,000 |
| Direct Operating Cost | 2,500,000 | --- |
| Overhead 10% DOC | 250,000 | --- |
| ODS | 650,000 | 650,000 |
| Adj. Direct Costs | 2,100,000 | --- |
| Revenue | 2,850,000 | --- |
| Operating margin between Oper. Costs and revenue | 750,000 | --- |
| Depreciation on 97.5% of private capital 25 year straight line | 234,000 | --- |
| Simple interest on 1/2 of 75% of private capital (aver. outstanding loan) | 123,000 | --- |
| Taxable Profit (Recovery before tax less deprec. & aver. simple interest | 393,000 | --- |
| Tax 48% | 184,000 | -184,000 |
| Profit after tax | 209,000 | --- |

(continued)

| | Private | Government |
|---|---|---|
| Capital necessarily employed (Recapture provisions apply to excess profits when after tax profits exceed 10% of CNE) | 2,090,000 | --- |
| Recovery after tax (Sum of depreciation and profit after tax) | 443,000 | --- |
| Amortization (75% of private capital 25 years) | 180,000 | --- |
| Est. Net Cash Flow After Tax, Interest & Amort. | 223,000 | --- |
| Net direct Govt. Costs | --- | 466,000 |
| Capital cost to Government at 5% 25 year basis | --- | 497,000 |
| Total Cost to Government | --- | 963,000 |

## APPENDIX H

## SHIP MORTGAGE INSURANCE

Ship mortgage insurance under Title XI of the Merchant Marine Act has over the years provided a source for substantially lower interest rates for ship mortgages. Although the cost to the government of the Title XI provision is negative (the insurance program actually has retained income), it does make certain financial reserve demands on the government according to information published by the Maritime Administration.

Ship loan and mortgage insurance contracts and commitments in the original principal amount of about 825 million dollars covering 126 ships, two ferries, including a hydrofoil, and one barge were in effect as of June 30, 1968, an increase of five ships since December 31, 1967, were announced by the Maritime Administration, U.S. Department of Commerce. Total outstanding principal balances of contracts and commitments to insure under Title XI were approximately 646 million dollars. Applications for insurance of 43 ships, 713 barges, and 10 tugs, for an estimated total of 334 million dollars are being processed. The benefits of the government's ship mortgage insurance program have included more than 1.7 billion dollars' worth of business for American shipbuilders, substantial employment for seamen and maritime workers ashore, the investment of more than one billion dollars of private capital in the U.S. merchant marine, with profit to the federal ship mortgage insurance revolving fund.

Retained income in the insurance fund at June 30 was about 19 million dollars. The retained income is held aside as a contingency fund for such instances as, for example, the infrequent defaults which the agency has to cover. Only 7 defaults have occurred out of the 151 vessels insured under the program. Of the 7, all of the ships are now in service. In 15 other cases, owners have either prepaid mortgage balances in full, or the mortgagees have voluntarily terminated the insurance.

Under Title XI of the Merchant Marine Act, 1936, the Maritime Administration is authorized to insure mortgages not to exceed 87-1/2% of actual cost on (1) passenger vessels, designed to be of not less than 1000 gross tons and capable of a sustained speed of not less than 8 knots, to be used solely on inland rivers and waterways, (2) oceangoing tugs of more than 2500 horsepower, (3) oceangoing barges of more than 2500 gross tons, and (4) other vessels of not less than 3500 gross tons and capable of a sustained speed of 14 knots.

On ships not meeting these requirements, and on those built or rebuilt with a construction subsidy, the agency may insure loans and mortgages for up to 75% of the actual cost of building or rebuilding.

On June 15, 1968, the President signed into law a bill eliminating the maximum interest rate of 6% permitted on loans and mortgages insured under Title XI. This gives the Secretary of Commerce the authority to approve such interest rates as he determines

to be reasonable, taking into account the range of interest rates prevailing in the private market for similar loans and the risks assumed by the Department of Commerce. Removal of the limitation frees millions of dollars for new investment and does not jeopardize the government's surveillance over the insurance of the loans and mortgages. Insurance contracts in force and pending follow.

UNCLASSIFIED

DOCUMENT CONTROL DATA - R & D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

1. ORIGINATING ACTIVITY (Corporate author)

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
Dept. of Naval Architecture & Marine Eng.
Cambridge, Massachusetts 02139

2a. REPORT SECURITY CLASSIFICATION

UNCLASSIFIED

2b. GROUP

- -

3. REPORT TITLE

STUDY OF THE METHOD, EFFECTIVENESS, AND POTENTIAL OF GOVERNMENT SUBSIDY TO THE U.S. MERCHANT MARINE

4. DESCRIPTIVE NOTES (Type of report and inclusive dates)

Final 1 Sept. 1967 to 31 Aug. 1968

5. AUTHOR(S) (First name, middle initial, last name)

Ernst G. Frankel

| 6. REPORT DATE | 7a. TOTAL NO. OF PAGES | 7b. NO. OF REFS |
|---|---|---|
| September 1968 | 80 | 0 |

| 8a. CONTRACT OR GRANT NO. | 9a. ORIGINATOR'S REPORT NUMBER(S) |
|---|---|
| N00014-67-A-0204-0011 | 68-18 |
| b. PROJECT NO. NR 003-11-01 | |
| c. NR 276-022 | 9b. OTHER REPORT NO(S) (Any other numbers that may be assigned this report) |
| d. | |

10. DISTRIBUTION STATEMENT

This document is subject to special export controls and each transmittal to foreign governments or foreign nationals may be made only with prior approval of the Office of Naval Research (Code 462).

| 11. SUPPLEMENTARY NOTES | 12. SPONSORING MILITARY ACTIVITY |
|---|---|
| | Office of Naval Research (Code 462)<br>Department of the Navy<br>Washington, D. C. 20360 |

13. ABSTRACT

It is the purpose of this study to review the method, effectiveness and potential of the various direct and indirect subsidy programs in effect, in satisfying the statement of policy of the most recent and currently active law applying to all Federal involvement and support of the U.S. Merchant Marine, as amended. Historic developments leading to the current state of the U.S. Merchant Marine will be discussed. Particular attention will be devoted to future needs, with regard to both the size of the merchant marine to fulfill the intent of the acts, and the type of ships to satisfy the new demands introduced by the changing technology.

DD FORM 1 NOV 65 1473 (PAGE 1)

S/N 0101-807-6811

UNCLASSIFIED
Security Classification

A-31409